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A MANUAL

OF

DERMATOLOGY.

BY

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WITH EIGHTY-EIGHT ILLUSTRATIONS.

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PREFACE.

THIS volume is intended to be the basis of a future much larger, more pretentious, and more original work. In its present form an effort has been made, not so much to write a distinctively original work, as to present—in as concise a manner as possible—the subject of Dermatology in its modern aspect.

The original intention was to give a concise and yet complete description of the symptoms, histology, etiology, diagnosis, and treatment of the different diseases, in a work of about three hundred to three hundred and fifty pages; but it was found that that was impossible, if any justice was to be done to the subject. Even with the present size I have had to curtail the matter much beyond my desire, and consequently the histology and treatment are in many cases not so complete as they might be.

Although I have done a great amount of work during the last ten years on the histology of the lesions of many of the skin-diseases, as may be perceived by a glance at the number of original drawings accompanying the text, yet, on account of the limited space at my disposal, I have not been able, as a rule, to give more than a brief description of the result of these studies. At some future time I expect to do this part of the subject much more justice.

As regards the treatment of the different diseases, much more could have been written, and the mode of application of many of the local measures recommended rendered more intelligible, perhaps, by a more lengthened description of the exact manner in which they are to be employed; but not only would space not permit, but, furthermore, I believe that for the intelligent, thinking physician, a statement of principles and indications is of much more service than a long list of formulæ.

As the object of the publication is to present the subject of Dermatology in its modern aspect, and as the day is past when one can write wholly original articles on the majority of skin or other diseases, I have drawn freely from other writers, and am especially indebted to the excellent works of Duhring, Hyde, Wilson, Tilbury Fox, Hebra, Neumann, Kaposi, and "Handbuch der Haut-Krankheiten" edited by H. von Ziemssen. The description of a number of the diseases is more or less copied from one or other of these sources, as individual experience alone would never enable one to write a complete original work on diseases of the skin, owing to the fact that some forms are very rare, and may never be observed by a dermatologist with a very large practice, extending over many years.

Some diseases, as myxœdema, etc., which more properly belong to internal medicine, have not been described in the present volume. Miliaria (prickly heat) does not appear as a separate disease, as histological studies have convinced me that it is only a form of eczema. The same is true of lichen simplex.

Sixty-five of the illustrations are original, and are either woodcuts or reproductions by the photo-engraving process.

This volume was announced to appear one year ago, but, owing to illness and numerous professional engagements, both public and private, it was impossible to complete the work within the specified time, and it would not even yet have been ready, had I not received great assistance from Dr. Gottheil, my clinical assistant at the New York Polyclinic, who has written the greater portion of a considerable number of articles. I am also indebted to Dr. S. M. Roberts and Dr. H. D. Chapin for assistance in preparing the manuscript, and to Dr. W. L. C. Forrester for proof-reading and preparation of the contents and index.

With a full knowledge of the defects and incompleteness of the volume, I hope it possesses sufficient merit, and contains enough original work, to justify the publication.

356 West Forty-second Street,
January, 1885.

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MANUAL OF DERMATOLOGY.

ANATOMY.

A KNOWLEDGE of the normal histology of the skin is absolutely necessary for a due appreciation of its pathological conditions, and although the proper place for its description is in a work on histology, I will in the present case follow the custom of writers on dermatology and commence with a description of the structures which form the skin proper, including its appendages, the hairs, nails, sweat and sebaceous glands.

General plan of arrangement.—The *integumentum commune* or skin, forms the external covering of the body, which it mechanically protects, and at the same time is endowed with certain physiological functions. The surface of the skin in some parts of the body is smooth and soft; in other parts it is more or less uneven and rough. This latter condition depends upon the presence of pores, hairs, furrows and ridges. The *pores* correspond to the surface openings of the hair follicles, sebaceous and sweat glands. The *hairs* vary in amount of development according to their situation. In the so-called hairy regions they are large; other parts are provided only with very fine hairs (lanugo hairs), and again, in certain regions they are absent. There are no hairs on the palms of the hands and soles of the feet, the dorsal surfaces of the terminal phalanges of the fingers and toes, the glans penis, and inner surface of the prepuce. The *furrows* are either long and deep, or short and superficial. The former are found chiefly in the flexures of the joints, and correspond to the folds in the derma produced by movements of the joint. The latter run between the papillary elevations, and by crossing each other, divide the surface into a number of

polygonal or lozenge-shaped fields. This division is well marked on the backs of the hands. These superficial furrows are more developed on the extensor than on the flexor surfaces of the extremities, and in the lumbar region more than on the anterior surface of the abdomen. Their direction is dependent on the degree of the tension of the skin. The *ridges* correspond

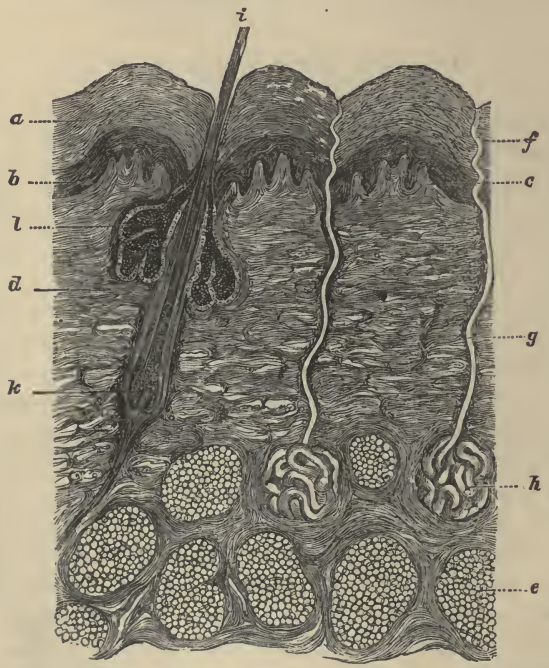


FIG. 1.—Diagrammatic perpendicular section, through the normal skin: (*a*), epidermis; (*b*), rete Malpighii; (*c*), papillary layer; (*d*), corium; (*e*), panniculus adiposus; (*f*), spirally bent end of sweat duct; (*g*), straight portion of duct; (*h*), sweat gland proper; (*i*), hair shaft; (*k*), root of hair; (*l*), sebaceous gland. After Neumann.

to the papillæ, and are most developed on the palmar surfaces of the last digital phalanges.

The color of the skin varies in individuals according to race, and in the same individual according to the part of the body. The dark skin of some races depends upon the presence

of blackish-brown pigment granules in the cell-body of the columnar epithelia of the rete mucosum. In the Caucasian race, pigment granules are usually present in greatest quantity in the areolæ of the nipples and in the scrotum and labia.

General structure.—The skin is composed of the following tissues: epidermis, corium, subcutaneous connective tissue, bloodvessels, nerves, lymphatics, sweat and sebaceous glands, hairs and nails.

A perpendicular section through the skin shows (Fig. 1.) three well marked layers; the most superficial is called the epidermis proper, (*a*, *b*); the middle layer is the corium or cutis, (*d*); and the deepest layer the subcutaneous connective tissue, (*e*). The limit of the epidermis at its place of union with the corium is sharply defined, but the corium and subcutaneous connective tissue gradually merge into each other, the boundary between them being only an artificial one.

Description of the different tissues.—The epidermis is subdivided from below upwards into the rete Malpighii, granular layer, stratum lucidum and corneous layer. This division is of practical advantage, for whilst the cells of all the layers are derived primarily from the rete, and in their movement toward the free surface undergo the chemical changes which give them their characteristic appearance, and hence should be classed as one structure, yet there is often a deviation of this physiological process in one or other of its stages, which demands a more exact definition than would be possible if the four layers were spoken of as epidermis only. Thus ichthyosis is an affection of the corneous layer and psoriasis of the rete Malpighii. In some diseases the rete is diminished, in others increased and the same holds true of all the layers. In Fig. 2 these different layers are shown.

FIG. 2.—Vertical section of the epidermis: (*a*), rete cells; (*b*), granular layer; (*c*), stratum lucidum; (*d*), corneous layer; (*e*), inter-papillary rete; (*f*), cutis papilla.

The *rete Malpighii* consists of nucleated corpuscles, rich in protoplasm, granular in appearance and disposed more or less in parallel strata, the elements of the different layers differing somewhat from each other as regards their size and shape. The lowest layer consists of columnar-shaped bodies arranged palisade-like, with their long axis more or less perpendicular to the surface of the corium. Where the papillæ are well developed, this perpendicular arrangement is not so marked. The base of some of these bodies terminates in a pointed extremity, which passes a short distance into the corium.

Each cell body consists of granular protoplasm, and incloses an oval nucleus. The next two or three strata consist of more or less polygonal-shaped bodies, each with a spherical nucleus. The cells are large, their contours sharply defined, and they contain some pigment. In the succeeding layers the cells increase in size and are more granular in appearance, the cells and nuclei become flatter as they approach the granular layer, and, finally, lie with their long axis parallel to the general surface.

FIG. 3.—"Prickle" cells of the rete magnified 1600 diameters.

All the cells of the rete, except those of the first row, are united to each other by filaments (Heitzmann), the so-called prickles of Max Schultze (Fig. 3).

These filaments vary in length and size in different parts of the body, they are most distinct where the rete is well developed, and are thicker and longer in the lower than in the upper layers. They are not found in the stratum lucidum. They are true connecting filaments between neighboring rete bodies, and not prickles of adjoining cells.

FIG. 4.—Isolated 'Prickle' cell of rete.

The spaces between the filaments and cells are filled with an intercellular albuminous substance, and may be regarded as minute channels for the conveyance of nutriment to the cells, and a path for peripheral nerve fibres. Variations in the number of the cellular layers in the rete are of normal occurrence,

but this part of the skin shows the least variation as regards its thickness. The arrangement of the elements in the different strata is the same in all parts of the body, and appears to be independent of the thickness of the rete. The lower surface of the rete adapts itself to the upper surface of the corium, and between the papillæ projects downward and forms the interpapillary rete Malpighii. Wandering, lymphoid, or embryonic cells are frequently present in this layer.

The *granular layer* (Fig. 2, *b*) consists of one or two strata of flattened, granular-looking bodies, which, in perpendicular section, appear spindle-shaped, with their long diameter parallel to the free surface of the epidermis. They are united to each other by very short filaments. The nuclei are very distinct and flattened in the same direction as the cell bodies. The latter are very coarsely granular in appearance, which is most marked near the nucleus, and gradually diminishes in amount as the periphery of the cell is approached. This granular appearance depends upon the presence of round granules of a peculiar substance, eleidin, (Ranvier), keratohyalin (Waldeyer), a result of the chemical changes in the preparatory stage of the horny process. They commence to form in the rete, but do not show distinctly by ordinary coloring.

The *stratum lucidum* (Fig. 2, *c*) is composed of at least three layers. It presents a clear, homogeneous, or striated appearance. The cells are flattened and have a staff-shaped nucleus. They are formed from the cells of the granular layer by loss of the granular substance and increase in transparency of the intergranular material.

Corneous layer.—In vertical section the corneous layer (Fig. 2, *d*) appears to be composed of wavy fibres and horny, transparent cells of various sizes and shapes. This variation in bulk and form depends in a great measure upon the thickness of this layer. The nearer the stratum lucidum the more distinct are the cells. If the layer is very thin the cells appear as elongated, flat or curved bodies, giving to this part of the epidermis a fibrous appearance (See the corneous layer in many of the illustrations in this book). When the corneous

stratum is thick the cells vary in size and form in different parts of the layer. Those of the lowest layer color slightly in carmine, are polygonal or spindle-shaped, and frequently contain a shriveled nucleus. As the surface is approached they become flatter and dryer and more bent upon themselves. The most superficial layers are composed of elongated, flat, dried up cells, the so-called *epidermic scales*. The corpuscles of the stratum corneum are arranged in layers, but the elements forming a layer are more closely united with each other than with those of adjoining layers. Hence this stratum can be

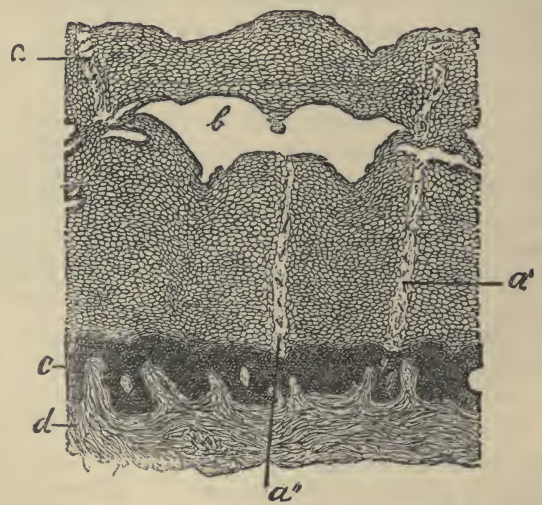


FIG. 5.—Vertical section of the palm of the hand from a case of sudamina: *a*, *a*, *a*, sweat ducts; *b*, sweat vesicle; *c*, rete Malpighii; *d*, cutis.

divided into lamellæ, as occurs in some pathological states of the skin (pityriasis rubra, &c.). This closer union between the cells composing a layer than with the cells of adjoining layers affords an explanation why, in the formation, for instance, of sudamina vesicles (see Fig. 23) the liquid collects between the layers instead of pushing towards the free surface. The corneous layer participates in the elevations and depressions of the underlying layers. This causes the undulating or wavy appear-

ance of the lamellæ, as observed in sections where the papillæ are well developed. The thickness of this layer varies greatly in different parts of the body and reaches its greatest development on the palms of the hands and soles of the feet (see Fig. 5).

Its thickness does not depend upon the rete Malpighii, as it sometimes forms a thick layer where the rete is thin, and *vice versa.*

The *subcutaneous connective-tissue layer* of the skin consists principally of connective tissue bundles, which, coming from the underlying fasciæ of the muscles or from the periosteum, pass in an oblique direction to the corium. These fasciculi are generally cylindrical in form, and variable in size; by their anastamoses or division, they form networks with interfascicular spaces. Generally the bundles are large, and hence a loose connective tissue is formed. Adipose tissue in greater or less quantity is found in this layer. The fat cells are collected into masses or lobules of various size. Each lobule has an afferent artery, a capillary plexus, and one or more efferent veins. Several lobules are sometimes united in the form of an acinous gland, and surrounded by a general sheath of connective tissue. Owing to the amount of fat tissue so often found in this layer, it has been called the *panniculus adiposus.* Fat lobules are absent in the penis, scrotum, labia minora, eyelids, and pinna. From this adipose tissue, fat columns, in some parts of the body, pass upward in an oblique direction to the bases of the hair follicles, especially to those of the fine ones. In cases of starvation, in the so-called wasting diseases, and in all acute diseases attended with excessive loss of tissue, the fat cells disappear to a greater or less extent. The skin then becomes correspondingly flaccid and wrinkled. Adipose tissue gives to the skin its tension and fullness, and to the body its appearance of roundness or plumpness. Obesity consists in an excessive production of fat cells. Lymphoid corpuscles are present in this layer, especially near the bloodvessels and glands. The sweat gland coil, and the lower part of deep-seated hair follicles lie in this layer.

Bloodvessels, lymphatics and nerves are present. The

bloodvessels are large, and after giving off branches to the hair follicles, sweat glands and fat globules, pass upward to the corium.

The corium.—The principal part of the corium consists of white fibrous and yellow elastic connective tissue, the latter increasing in amount with advancing years. The white fibrous tissue forms a much denser, firmer structure here than in the subcutaneous layer. It consists of deep oblique and superficial horizontal bundles. The latter comprise fine bundles of fibrous connective tissue that run parallel with the surface of the skin, and by their division and anastomoses, form a very fine network, with small interfascicular lymph spaces. From this layer bundles pass upward into the papillæ, and there form a still denser network. The deep, oblique layer is a continuation upward of the subcutaneous connective tissue bundles. When they reach the situation for the corium, they divide into fasciculi, and these continue to divide and anastomose with each other and with fibres from the superficial layer. The anastomoses are very close; hence, the corium is formed of a dense network of connective tissue, except where it is traversed by bloodvessels, lymphatics, nerves, hair follicles, sebaceous and sweat glands. From the greater size of the connective tissue bundles in the lower part of the corium, and the consequent looseness of the network formed by their anastomoses, this part has been called the *pars reticularis corii*, and the upper part, from the closeness of the network, the *pars papillaris*. From the upper part of the corium fibres pass upward to form the papillæ. (See Fig. 1, *c.*; and fig. 5). The form and size of the papillæ vary in different parts of the body. Where they are most developed, as on the inner surface of the terminal phalanges of the fingers and toes, they are conical in shape. In some other regions they are either absent, or form only slight elevations on the corium, giving a wave-like appearance to its upper surface. The corium is separated from the stratum mucosum by a thin, transparent basement membrane, from which prolongations pass upward between the cylindrical cells of the rete.

Elastic fibres are present in large numbers in the corium, especially in its upper part, where they form a close network. Numerous lymphoid bodies are also present, especially in the vicinity of the bloodvessels and glands. Hair follicles, sebaceous glands, sweat ducts, nerves, lymphatics, and non-striated muscles, are also present.

Bloodvessels.—Only the corium and subcutaneous tissue are provided with bloodvessels. The *arterial vessels* supplying the skin form two parallel horizontal layers, a superficial and a deep one. The deep layer lies in the subcutaneous tissue, and consists of large vessels running horizontally. From this layer branches pass to the sweat glands and fat follicles of this region. The principal branches pass perpendicularly or obliquely upward through the corium to its upper part, and after free branching and anastomoses, form a superficial horizontal layer, the *stratum subpapillare*, directly beneath the papillæ. From the ascending vessels, branches are given off to the hair follicles, sebaceous glands, and tissue of the corium. From the subpapillary layer (see Fig. 6), small branches pass upward into the papillæ, where they become capillary vessels, which proceed to the summit of the papillæ. Before reaching the apex, they frequently divide into two or more branches. Those papillæ in which tactile corpuscles are seated have generally no bloodvessels.

FIG. 6.—*a*, stratum subpapillare; *b*, papillæ containing capillary vessels.

The *veins* are arranged on the same plan as the arteries; they form a superficial and a deep layer, in corresponding situations.

Nerves.—Both medullated and non-medullated nerve fibres are present in the skin. They are found in combination in the nerve trunks situated in the corium and subcutaneous tissue; the medullated fibres being most numerous in those regions where the Pacinian and tactile corpuscles are most abundant. Both simple and compound bundles are met with. From these bundles in the subcutaneous tissue and lower part of the corium nerve fibres pass to the glands, bloodvessels, and Pacinian

corpuscles of these parts. In the corium some of the medullated fibres lose their medullary sheath and continue as non-medullated fibres. The nerve bundles pass upward through the corium to the subpapillary region, where many of them change their course and run in a horizontal direction. Some fibres before reaching this region return to the deeper parts of the corium to re-ascend, forming a curve with the concavity to the free surface. Some of the horizontally running fibres form a plexus around the subpapillary vessels and capillaries of the papillæ. The subpapillary plexus is close and consists of fine non-medullated fibres in close connection with the bloodvessels. Within the papillæ, they form a dense plexus around the capillaries, of thick or fine varicose fibres with many nuclei. From this plexus, fibres pass toward the epidermis and either enter it directly or after running a short distance parallel to its under surface. Having entered the rete, they lie between the epithelial bodies and form a plexus. According to some they form a double plexus, a superficial and a deep one. They have been described as ending in minute swellings, either between or within the cells, but if the view that the cells of the rete afterwards become corneous cells be correct, this mode of termination can hardly be possible. I believe they always form a plexus.

Of the *medullated fibres* a large number pass upward into the papillæ where they form loops and return to the subpapillary region. (See Figs. 7, 8, 9, 10). From this situation they may again pass upward into a neighboring papilla. (See Fig. 7). Several of these looped medullated fibres are sometimes present in a single papilla. (Fig. 8). Other medullated fibres pass upward to form tactile corpuscles. In some situations, medullated fibres pass in the subcutaneous tissue and corium from the trunks to form Pacinian corpuscles. These corpuscles generally occur in small groups, a nerve fibre sometimes dividing to form two corpuscles.

The tactile corpuscles are generally round, oval, or longish bodies situated almost always within a papilla, but occasionally somewhat beneath it. When present they generally occupy

the greater part of the papilla. Generally the papilla is devoid of bloodvessels, but the latter are sometimes present, and may extend to the apex and be of the usual size or smaller than those in the other vascular papillæ. (See Fig. 9). A corpuscle when examined microscopically, presents in vertical section a transversely striated appearance, the lines running either directly transversely or obliquely, and giving to the corpuscle (when previously hardened in chromic acid) a very irregular exterior, as if formed by anastomosing bundles of white fibrous tissue. (See Figs. 10, 11, 14). As shown by the action of a

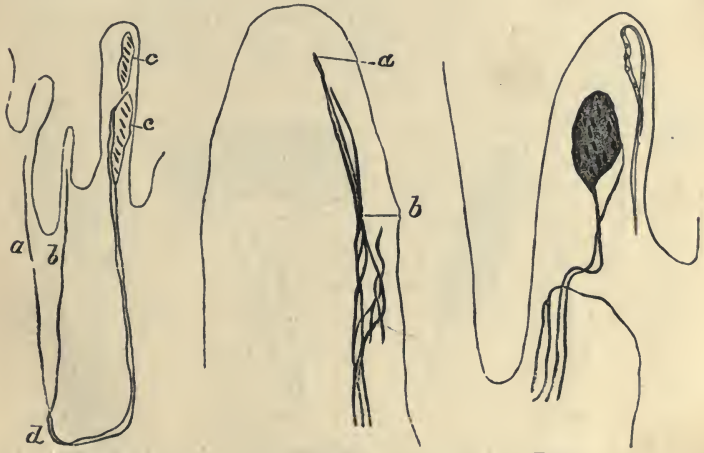


FIG. 7. FIG. 8. FIG. 9.

FIG. 7.—Two corpuscles in a single papilla; the afferent nerve (*b*) coming from an adjoining papilla. FIG. 8.—Looped medullated fibres. FIG. 9.—Papilla with bloodvessel, corpuscle and looped fibre.

weak solution of potash in well colored gold specimens, the striated appearance depends upon white fibrous connective tissue and to a less extent upon nerve fibres. Each corpuscle has an afferent and efferent nerve. The afferent nerve passes more or less directly upward from the subpapillary region and enters the corpuscle at or near its base. (See Figs. 7, 9, 10, 11, 12, 13, 14, 15). Some lose their medulla whilst in the corium and enter the corpuscle as non-medullated fibres. Sometimes

the afferent fibres come from a neighboring papilla. (See Fig. 7). Having entered the corpuscle, the nerve passes in a spiral direction towards the apex and finally after a greater or less number of windings leaves the corpuscle. The afferent fibre sometimes loses its medulla before reaching the corpuscle, and when within it, it frequently changes in thickness, from changes in the amount of medullary substance present. The fibre within a corpuscle frequently divides, and there may be consequently two or more efferent fibres.

Pacinian Corpuscles.—The Pacinian or Vater's corpuscles are elliptical or pointed, or occasionally curved, or irregularly shaped bodies found especially in the

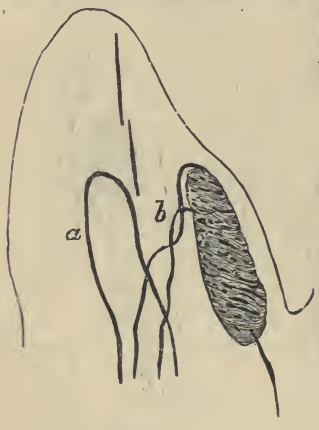


FIG. 10.

FIG. 11.

FIG. 12.

FIG. 10.—Corpuscle and looped medullated fibres. FIGS. 11, 12, 13, 14, 15 show afferent and efferent fibres. FIGS. 10, 11 show the striæ before the use of potash. FIG. 11, corpuscle lies horizontally in the papilla. FIGS. 7, 15 are two corpuscles in a single papilla.

subcutaneous tissue of the volar side of the hand and plantar side of the foot. Each corpuscle is connected with a medullated nerve fibre which, with its thick sheath, represents the stalk of the corpuscle. The corpuscle proper consists of a great number of capsules placed concentrically around a central elon-

* The reasons for the above view of the structure of the corpuscles were given in a paper read before the American Dematological Association in 1882, of which a summary appeared in a September number of the *Medical News* of Philadelphia.

gated clear mass. It shows, therefore, a concentric striation, each stria corresponding to a capsule seen in profile. The capsules are thinner at the periphery than in the central portions. Each capsule is composed of (*a*) a hyaline ground membrane; (*b*) in this membrane fine connective tissue fibres arranged in a transverse manner either regularly in one or two layers or irregularly are imbedded; (*c*) on the inner surface of this membrane is an endotheliod layer limiting the capsule. The stalk of the corpuscle consists of an ordinary medullated nerve fibre with fibrous connective tissue; outside of this a limiting membrane, and most externally a number of lamellæ like the capsules. The medullary sheath and sheath of Schwann cease at the entrance of the nerve into the central clear mass. The central space contains the axis cylinder and a transparent matrix and limiting membrane. The manner of termination of the axis cylinder is not fully decided. I believe that the nerve forms a plexus or loop and leaves the corpuscle at one of its extremities. Ranvier describes the nerve as sometimes traversing one corpuscle to terminate in a second or even a third corpuscle. In this case it loses successively its envelopes, and its medullary sheath completely disappears in the central mass; but at the opposite pole all its membranes form again before the nerve enters the other corpuscles.

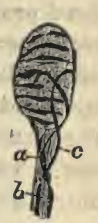


Fig. 13.

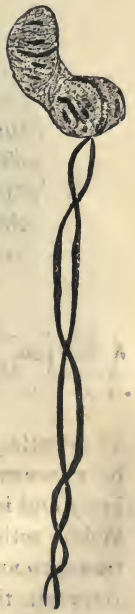


Fig. 14.

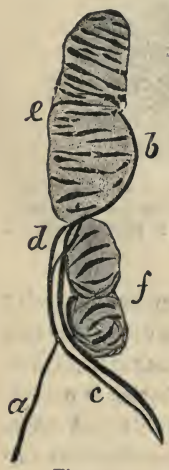


Fig. 15.

Sweat Glands.—The sweat glands—*glandulæ sudoriferæ*—are present in the skin of all parts of the body except that of the glans penis and margin of the lips. They are most numer-

ous in the palms of the hands and the soles of the feet, where they number, according to Krause, 2,685 to 2,736 to the square inch. A sweat gland is composed of two parts, viz: the gland proper, or secreting part, and an excretory duct. The gland proper lies in the subcutaneous tissue and consists of the lower part of the sweat apparatus coiled upon itself into a more or less globular form, the tube terminating in a cul-de-sac, the blind extremity generally lying in the centre of the coil. The diameter of the secreting part is greater than that of the duct. The gland proper is formed of secreting cells, unstriped muscle fibres and a basement membrane. The cells (glandular

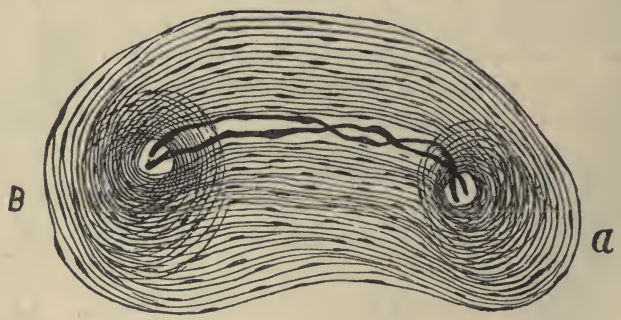


FIG. 16.—A Pacinian corpuscle stained in gold chloride. *a*, proximal pole; *b*, distal pole. Two axis cylinders winding around each other are seen most distinctly. At *b* the union is not seen, but the direction made it probable that a loop was here present.

or secreting epithelial cells) are polygonal in form, and granular in appearance. Oil globules are always present in the cell body and in the lumen, and are the result of the normal physiological action of the cells. The basement membrane is a thin, transparent structure composed of flattened endothelial cells. Between the secreting cells and the basement membrane unstriped muscle fibres are present in small numbers.

In certain glands, especially those of the axilla, a layer of unstriped muscle fibres is found external to the basement membrane.

The sweat glands are surrounded by a somewhat loose,

fibrous connective tissue, from which fibres pass inward and form a denser tissue between the tube coils. A large number of lymphoid cells are always present in this intertubular tissue. The gland is richly supplied with bloodvessels.

The excretory duct passes upward (see Figs. 1 and 17) from the gland proper toward the free surface, where it opens with a funnel-shaped orifice. In passing through the corium it pursues a straight or slightly wavy course and enters at the lowest part of an interpapillary portion. The structure of the duct differs from that of the gland proper in the shape of the epithelial cells, the absence of muscle fibres and the presence of a cuticula. This cuticula, a hyaline membrane, lines the inner surface of the epithelial layer and limits the lumen of the duct. As the duct approaches the rete its epithelial cells increase in number and form two or more layers, and when it enters the rete it loses the basement membrane and is formed only of the cells of the mucous layer, which have become more or less flattened and spindle-shaped. The direction of the tube through the rete is either straight or spiral. In passing through the corneous layer the duct pursues a spiral direction, the number of spirals depending upon the thickness of the layer. The largest number is present on the palms of the hands and soles of the feet. The wall of the duct is formed of the cells of the corneous layer, and the duct opens on the free surface at the summit of the ridges.

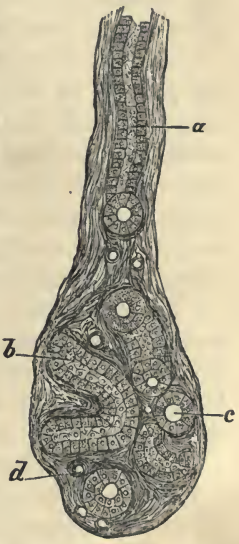


FIG. 17.—Lower part of a sweat gland: *a*, excretory duct; *b*, coiled secreting tube; *c*, secreting tube cut transversely; *d*, bloodvessels cut across.

Sweat glands commence to form in the fifth month of fœtal life; in the seventh month a canal is formed and the lower end of the tube becomes dilated and somewhat twisted. In the ninth month the tube is coiled upon itself and the gland proper is formed.

Sebaceous glands.—The sebaceous glands are seated in the corium and are in close connection with the hair follicles. When the hairs are large the glands appear as appendages to the follicles into which their duct enters, but lanugo hairs may be said to open into the ducts, as the diameter of the latter is much greater than that of the former.

The sebaceous glands are almost, without exception, acinous glands, the number of lobules forming a gland ranging from two to twenty or more. The largest glands are seated in the nose, cheeks, scrotum, about the anus and in the labia.

Every sebaceous gland consists of two parts, viz.: the secreting portion or the gland proper, and the duct. The gland proper consists of a basement membrane externally, and epithelial cells or their product internally. (See Fig. 18.) The basement membrane is a continuation of the basement membrane of the skin, and is surrounded externally by dense connective tissue containing bloodvessels, nerves and lymphatics. The epithelial cells resemble in form those of the rete, those of the outer layer are cylindrical in shape, further inward they become larger, more or less polyhedral in form and contain fat, the amount increasing as the centre of the gland is approached. In the centre itself free fat, fat crystals, and remnants of epithelial cells are found.

The duct is similar in structure to the gland proper.

Internal to the polyhedral cells are the cells of the corneous layer of the epidermis, the number of which diminishes in proportion to the distance from the free surface. In regions with the large hairs the duct opens into the follicle at an acute angle near its upper third, and the gland proper lies about on a level with the middle third of the follicle.

The sebaceous glands commence to develop at the third month of fœtal life as a projection from the external root-sheath of the hair, and consist at first of epithelial cells, which, by subsequent multiplication and projection further downward, form the gland.

Muscles.—Striated and non-striated muscles are present in the skin. The former are found both in the smooth and bearded

parts of the face, and also in the nose. They arise from the deeply seated muscles, and passing upward between the glands of the skin terminate in the corium.

The non-striated muscles are very numerous, and run either in a parallel or in an oblique direction to the general surface. Those lying parallel with the general surface run either in a straight or circular direction. When they run in a straight direction and anastomose with each other, they form a network, as in the scrotum, prepuce, and perinæum. Where they have a circular course, as in the areola of the nipple, a continuous ring muscle is formed.

The majority of the muscles running in an oblique direction have a special relation to the hair follicles and sebaceous glands. The muscle arises from the internal sheath of the hair follicle and, passing obliquely upward, skirting the lower surface of the sebaceous gland, terminates in the upper part of the corium, (Fig, 18 *n.*)

Occasionally two muscles arise from opposite sides of the same follicle sheath. A muscle in its course upward frequently divides into two or more bundles, these secondary bundles afterward pursuing different directions, or uniting with fibres from other muscles, form a network in the corium. Occasionally several secondary bundles run nearly parallel with each other and terminate either separately or conjointly.

Some muscles have no relation to the follicles, but pass more or less vertically upward to be inserted in the corium.

The number of muscles present in the skin varies in different regions of the body. The order of frequency is as follows : Scrotum, penis, anterior part of the perinæum, scalp, forearm, thigh, arm, shoulder, forehead, abdominal wall, axilla, leg, face, volar and dorsal surfaces of the hands and feet (Neumann.) They are less developed on the flexor than on the extensor surfaces. The size varies according to the person and the region of the body. It is impossible, therefore, to recognize with certainty a slight hypertrophy or atrophy of this structure. The muscles are richly supplied with blood-vessels.

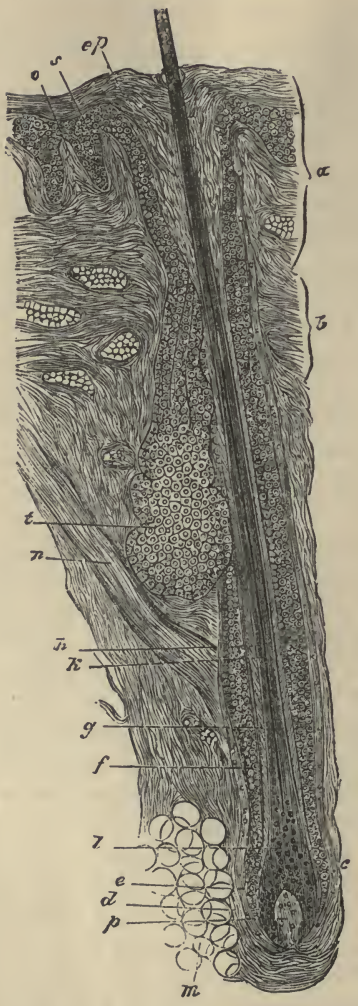


FIG. 18.—Hair from beard. *a*, canal of exit; *b*, neck of hair follicle; *c*, lower part of hair follicle; *d*, external sheath of hair follicle; *e*, internal sheath of hair follicle; *f*, external root-sheath of hair; *g*, internal root-sheath of hair; *h*, cortical substance; *k*, medulla of hair; *l*, root of hair; *m*, fat cells; *n*, erector pili; *o*, papillæ of skin; *p*, papilla of hair; *s*, rete mucosum; *t*, sebaceous gland; *ep*, stratum corneum which is continued into the follicle, (Biesiadecki.)

The hair.—The parts to be studied in connection with the *hair proper* are the *hair follicle* and the *hair papilla.* The hair proper is a cylindrical structure seated within the hair follicle and upon the hair papilla.

Its base lies either in the subcutaneous tissue or corium. The portion of the hair proper within the follicle is called the *root* of the hair, and the remainder the *shaft* of the hair. The true hair follicle includes all that part of the hair-sac below the place where the sebaceous duct enters the follicle. It is of very variable size and consists of a blind extremity and a funnel shaped orifice (*a*). The follicle is narrowed just below the orifice, and forms the neck of the follicle (*b*). This is the narrowest part of the follicle, and here the sebaceous duct enters. From the neck downward the hair follicle increases in size, being largest at its lower end, where it rests upon the papilla.

The hair follicle consists of three layers: the external, middle, and internal hair-follicle sheaths. The middle and external consist of connective tissue containing bloodvessels and nerves. The internal sheath is a basement membrane.

The *hair papilla* is formed from the follicle sheaths, and has the same structure. Within the papilla are one or more arteries and veins and non-medullated nerve fibres. The papilla is about twice as long as broad, and the breadth is in direct proportion to the length of the hair.

The follicles stand obliquely to the surface of the skin, and the contents are the external and internal root sheaths and the hair proper.

The *external root-sheath* consists of rete-like cells, the number of which diminishes as the base is approached, and the sheath generally ceases on a level with the apex of the papilla.

The *internal root-sheath* arises from the cylindrical cells covering the papilla which form the two layers, the sheath of Henle and the sheath of Huxley. The hair is formed from this sheath (Heitzman). Within the internal root-sheath lies the *hair proper*, which consists of a knobbed extremity, the root of the hair, and a cylindrical portion, the shaft. Between the hair proper and Huxley's sheath lies the hair cuticula.

The *root of the hair* consists of cells closely resembling those of the rete. Those seated directly upon the basement membrane are cylindrical, those above polyhedral and near the hair shaft, spindle-shaped. The pigment of the root of the hair is sharply limited externally by the cuticula.

The *shaft of the hair* consists of a central part or medulla and a fibrous portion covered by the cuticula. The medulla consists of polyhedral cells containing fat and pigment. The fibrous portion forms the principal part of the shaft and consists of flattened fusiform cells with pigment.

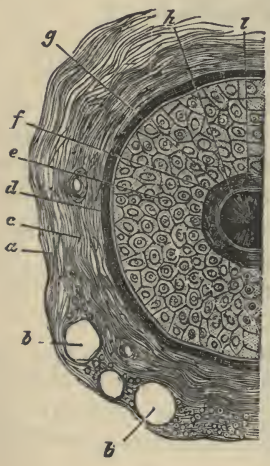


FIG. 19.—Transverse section of the hair beneath the neck of the follicle: *a*, external sheath of follicle; *b*, transversely cut bloodvessels; *c*, inner sheath of follicle; *d*, basement membrane; *e*, external root sheath; *f*, Henle's layer; *g*, Huxley's layer; *h*, cuticula; *i*, hair shaft. (Biesiadecki.)

A hair increases in length by the formation of new elements in its root, and they, by subsequent elongation and movement upward, push the shaft of the hair and its cuticula before them.

The first development of hair takes place at the end of the third or beginning of the fourth month as a projection downward of the rete mucosum. The papilla is formed later. The first hairs are always of the lanugo variety—fine hairs with a very short follicle. If a hair has reached its proper term of existence, it falls out, and is replaced by a new hair, which grows from the old papilla.

The nails.—The nail is merely a modification of the epidermis, and differs from the stratum corneum only in being harder and firmer. It is a longish, four-sided, hard, elastic, transparent, dense, flat body, situated in a fold of the skin on the dorsal surface of the terminal phalanges of the fingers and toes. It is slightly curved in its long diameter, the convex surface being above and the concave below. The fold of the skin in which the posterior and two lateral surfaces

are imbedded increases in depth from before backward, and at the posterior margin is continued forward for a short distance on the surface of the nail. This fold is called the *nail fold*, and the tissue upon which the nail is seated is termed the *bed of the nail*. That part of the nail imbedded in the flesh posteriorly is the *root* of the nail and the remainder its *body*. The flesh underlying the root is called the *matrix*, and that underlying the body of the nail the *bed* of the nail proper. The matrix and bed of the nail proper are separated by a more or less convex line, generally easily seen through the nail, and called the *lunula*. The bed of the nail is formed of rete and corium.

FIG. 20.—Transverse section of the nail through the bed of the nail proper: *a*, nail; *b*, loose corneous layer beneath it; *c*, mucous layer; *d*, transversely divided nail ridges; *e*, nail fold without papillæ; *f*, the horny layer of the nail fold which has pushed forward on the nail; *g*, papillæ of the skin of the finger. (Biesiadecki.)

There is no fat in its subcutaneous tissue. The papillæ in the matrix project forward, and are shorter and closer together than in the bed of the nail proper.

In the bed of the nail proper the transition from rete to horny cells is very rapid, whilst in the matrix it is gradual, consequently this latter portion of the nail is softer than the other. The nail is formed from the matrix, and thickened from the corneous cells of the body of the nail. The nail is nourished by blood from the nail-fold and from the bed of the nail. They grow more rapidly in children than in adults, and more rapidly in summer than in winter. The rapidity of growth

depends upon the special nail and the individual. The nail begins to form in the third month of intra-uterine life as a fold covered with young epidermic cells. In the fourth month a layer of new cells, which afterward become the horny cells of the nail, appear between the rete and the young epidermic cells. At the fifth month the epidermic covering disappears, and the nail lies exposed. Between the sixth and eighth months the nails are somewhat firm, but do not extend quite to the ends of the fingers. At the eighth month the nails are well developed, and extend to the ends of the fingers.

PHYSIOLOGY.

The physiological functions of the skin are those of respiration, secretion, regulation of the temperature of the body, sensation and protection to the general surface of the body.

RESPIRATION.

The respiration performed by the skin is similar to that by the lungs. Carbonic acid is given off, and oxygen, although in very small quantity, is taken in. The amount of carbonic acid given off as compared with that exhaled by the lungs is also very slight.

SECRETIONS.

Sweat Secretion.—The sweat and sebaceous glands furnish the secretory products of the skin. Probably all of the sweat or watery liquid which reaches the free surface comes from the gland proper portion of the sweat apparatus and none from the papillary bloodvessels or duct of the sweat gland. Sweat is a clear, watery secretion, with an acid reaction and saltish taste. Sometimes, especially when the secretion is increased by such diaphoretics as pilocarpine it is neutral or alkaline in reaction. It contains water, volatile fats, acetic, butyric, propionic, caproic, and caprylic acids, chloride of sodium, and urea. Water forms about 99 per cent. of the whole secretion. Urea is always present and is generally considerably increased in amount in pathological conditions of the kidneys. The water reaching the free surface of the skin usually escapes as vapor, the so-called insensible perspiration, but if the sweat glands are

very active it forms in drops—sensible perspiration. The amount given off depends upon many conditions, and is consequently, very variable, but is on an average about twice as much as that given off by the lungs. One of the main conditions which regulate the quantity of sweat formed is the amount of blood passing through the capillaries of the skin, and this depends on the quality, amount and temperature of the food and drink taken ; on the temperature, moisture and movement of the surrounding air ; on the nature of the clothing, the amount of muscular exercise, the mental condition of the person and the condition as regards activity of the kidneys and somewhat, also, of the intestinal tract. An increased amount of blood in the capillaries causes an increase in the discharge of water, consequently an increase in those conditions above mentioned which regulate the amount of blood, increase the quantity of sweat formed. Simple venous stasis with normal oxydation of the blood and inflammatory hyperæmia do not increase the amount of water discharge. Also an increase in the blood pressure in the aortic system from increase in the amount of water taken does not excite sweat secretion unless the blood is heated by the warmth of the liquid taken, by the high temperature of the surrounding air, by restriction in the amount of heat and water given out, or by muscular activity (Ziemssen.)

Atropia can cause diminution or cessation of sweat secretion by paralysis of the nerves of the sweat glands. The secretion of sweat depends upon a nervous influence ; the centres for the sweat nerves are situated in the spinal cord and extend as far as the medulla oblongata in which there is supposed to be a general centre for all the spinal centres. The nerves influence the amount of sweating to a certain extent independently of the amount of blood in the cutaneous vessels, as shown by the sweating in phthisis and in the crisis of some acute diseases.

In sweat secretion there are always some oil globules to be detected. These no doubt assist in keeping the general surface oiled ; though to a very small extent, as compared with the secretion from the sebaceous glands.

Sebaceous Secretion.—The sebaceous secretion consists of free fat, epidermic cells, fat, sebaceous cells, cell *debris* and cholesterine crystals. The free fat oils the hair and epidermis. Chemically, sebaceous secretion consists of water, palmatin, olein, palmitic and oleic acid, soap, cholesterine, a casein like albuminoid body and inorganic salts. The amount of secretion varies greatly in different persons, depending upon the size and functional activity of the glands. From the period of puberty until twenty-five or thirty, they are most active. The secretion process is a continuous one and consists in a filling of the sebaceous cells with fat, and their subsequent rupture and expulsion of contents on the free surface. The peripheral cells contain only a few fat globules, and the amount of fat increases as the centre of the gland is approached, until the whole cell is changed to a fat cell, when it bursts, and the fat becomes free.

The secretion formed in the external auditory canal is a combination of ordinary sebaceous and sweat secretion.

REGULATION OF THE TEMPERATURE OF THE BODY.

The skin regulates the amount of heat given out by the body and thus controls the heat of the blood. Heat is given out both by radiation and conduction. The corneous layer is a bad conductor of heat and thus prevents too great loss of heat by the body. It also exercises pressure upon the rete mucosum and capillary bloodvessels preventing their overfilling and loss of heat and fluid. Elevation or diminution of the external temperature, produces, by reflex action through the vaso-motor centres, either dilatation or contraction of the capillaries, and relaxation or contraction of the muscles of the skin. Cooling of the skin acts locally also by contracting the bloodvessels and muscles, and thus diminishing the amount of heat given off. To prevent the injurious effects of too great heat of blood, sweat is secreted and heat carried off by the water. In the evaporation of the sweat heat is consumed.

ORGANS OF SENSATION.

The organs of touch (the tactile corpuscles) are situated in the skin, as also those of general sensation. We can thus judge of space, feel of objects, temperature, ability to localize, etc.

PROTECTION TO THE GENERAL SURFACE.

On account of the looseness of the subcutaneous tissue and the elasticity and firmness of the cutis, the internal organs are protected against injuries, blows, etc. From the insensibility of the corneous layer and its great impermeability to liquids, the deeper structures are protected from the effects of high or low temperatures, and caustic or poisonous liquids. The hair of the head, when in normal quantity, protects the brain from the effects of heat and injuries.

As regards the faculty of the skin to absorb substances applied to it, the epidermis is almost impermeable to liquids, gases and solid bodies. This resistance to absorption lies in the corneous layer and is further assisted by the oiling which it receives from the sebaceous gland secretion. If the epidermis is removed, absorption can take place. Water, and substances dissolved in water are not absorbed by the epidermis. The corneous layer will, upon the application of water, swell up and imbibe some of it, but it is not absorbed by the skin. If the substances are dissolved or suspended in oils or fats and well rubbed in, they are absorbed and taken into the system, as shown by the effects of inunctions of mercurial ointment in the treatment of syphilis.

The oleates are especially easily absorbed.

The mode of entrance in these cases is through the orifices and ducts of the glands. Volatile substances, as turpentine and camphor, may pass in, if the skin is previously washed with soap or ether to remove the fat.

The question of the faculty of the skin for absorption is one which requires further careful experiments and observation.

GENERAL CONSIDERATIONS.

SYMPTOMATOLOGY.

The symptoms resulting from the nutritive or functional diseases of the skin are either subjective or objective. Besides these there are constitutional symptoms accompanying some diseases, as fever, intestinal derangement, etc.

Subjective symptoms.—They consist in alterations in sensation, either in increase or diminution, or change in quality. An increase gives hyperæsthesia, a diminution anæsthesia, and a change in quality, pain, itching, tickling, etc. For the presence of these we must as a rule depend upon the statements of the patient, but anæsthesia may be recognized by testing with a needle, and when itching is present the skin will almost invariably be found excoriated, and in a manner suggestive of the result of scratching with the finger nails; that is, the excoriations are in long lines.

Objective symptoms.—These are the most numerous and most important. They are the result of the pathological process occurring in the skin, and their careful study will enable us to a great extent to judge of the nature of that process. They are the lesions upon the skin which we are able to see and feel. They are divided into primary and secondary lesions. This division is of the greatest value, and in diagnosis we must always seek for the nature of the primary lesion. The primary lesions represent the pathological process up to the acme of its development. The secondary lesions are the result of primary lesions. Thus in scarlatina, the hyperæmic or slight inflammatory condition is the primary lesion in the skin, and the subsequent scaling is secondary. In an ulcerating syphilide, the syphilitic round cell infiltration is the primary lesion, and the

breaking down and consequent ulceration is the secondary lesion.

The primary lesions are 1. Maculæ, spots, macules; 2. Papulæ, papules; 3. Vesiculæ, vesicles; 4. Bullæ, blebs; 5. Pustulæ, pustules; 6. Pomphi, wheals; 7. Tubercula, tubercles; 8. Phymata, tumors.

The secondary lessons are: 1. Squamæ, scales; 2. Crustæ, crusts; 3. Rhagades, fissures; 4. Excorationes, excoriations; 5. Ulcera, ulcers; 6. Cicatrices, scars; 7. Pigmentation.

To appreciate the subsequent description of diseases, it is necessary that we have a clear idea of the appearance and nature of both the primary and secondary lesions.

PRIMARY LESIONS.

MACULÆ; SPOTS.

Definition.—Limited, variously sized, shaped and colored spots of altered skin, unattended by special elevation or depression.

As regards the color, they may be of all shades, but are generally red, brown, black, white or yellowish. If of bright red color, they arise from hyperæmia of the papillary layer and upper part of corium, and disappear upon pressure. If the spots are from lentil to finger nail in size they are called roseola, and if the redness is diffuse and extends over a considerable area, it is called erythema. If there is exudation besides hyperæmia, the spots will be darker in color, as in the macular syphilide. Acquired hyperæmic spots, which with the naked eye are seen to contain enlarged bloodvessels, are called telangiectases, and when hereditary, are called nævi vasculosi. The hyperæmic area around a skin lesion, for instance, a boil, is called the areola.

If a macula is caused by hæmorrhage into the skin, the disease is called purpura. The redness in this case does not disappear upon pressure. If the hæmorrhagic spots are pin point in size, they are called petechiæ; if long, narrow, streak-like,

they are called vibices, and if of larger size and irregular shape, are called ecchymoses. The blue, greenish-brown, or yellow color observed after hæmorrhages have lasted a short time are due to involution changes in the exudation.

If the maculæ are white they arise from deficiency of pigment either hereditary or acquired. As hereditary deficiency it may be in spots (achroma) or general (albinismus). As acquired it constitutes vitiligo.

An excess of pigment is frequently met with and produces yellowish brown, dark brown or black maculæ. The yellowish brown spots, (chloasma), so frequently seen on the forehead and face of women who have borne children or suffer from uterine disease is due to an excess of pigment in the rete. Grouping of pigment is seen in freckles, nævus pigmentosus, and nævus spilus. If the change in color occupies a large part of the body and is distributed in a uniform manner, it is called discoloration. This condition is met with in icterus, chlorosis, the last stages of carcinoma, lepra, and in the staining from the internal administration of nitrate of silver.

The macular patches show all variations as regards size and form, but are usually circumscribed. They are the result of various causes and represent various pathological conditions.

PAPULÆ ; PAPULES.

Definition.—Millet to lentil sized, circumscribed, solid, elevated pathological formations.

Papules are of various shapes, round, conical, or flat, and red, pale or normal in color. To the feel they are hard or slightly compressible. They are met with in many diseases, and owe their origin to many different pathological processes. They may be formed by a simple collection of epidermic cells on the general surface, as occurs in psoriasis, or from a collection of similar cells in the mouths of hair follicles, as is the case in keratosis pilaris. The most frequent cause is from exudation and cell infiltration into the papillæ and rete, as occurs in papular eczema. This papule formation may represent the acme of the

process, or the inflammation may increase in intensity, accompanied by more exudation, and the papule become changed to a vesicle ; or if with the exudation there is much cell emigration then a pustule will result. A collection of sebum in the acini of the sebaceous glands produces a papule (milium) and hæmorrhage into the rete, papillæ, or around glands, makes a papular eruption, purpura papulosa. Papules are also produced by cell infiltration into the papilla and corium, as occurs in syphilis, or from a new cell growth in the corium, as in lupus vulgaris. As the nature of the pathological process is so different in the different cases, so the course of the eruption and its significance differ according to the nature of the process. Itching may or may not be present, according to the nature of the affection. If acutely inflammatory, as in eczema, there will be itching, but if depending on changes deep in corium, they will not itch (lupus, milium).

VESICULÆ ; VESICLES.

Definition.—Hemp to lentil sized, rounded or acuminated, transparent, opaque or dark elevations of the epidermis, filled with a serous, sero-purulent or bloody liquid.

The regular type of vesicle is transparent and contains clear, serous or watery fluid. If opaque, it is from increased emigration of lymphoid corpuscles and their metamorphosis, and if black, it is in consequence of hæmorrhage into the vesicle. In shape, vesicles are either round and acuminated, or have a depressed centre on the summit, when they are called umbilicated. They may be fully or only partially distended by the liquid contents. If only partially, then the walls will be flaccid and have an uneven surface. The consistence of vesicles depends upon their situation. If deeply seated they are firm, as the wall is thick ; but if superficially seated, the wall is thin and the vesicle easily ruptured. Vesicles result from exudation from the papillary vessels into the epidermis, or from retention of sweat. As the exudation passes upward the rete cells swell, the intercellular spaces enlarge, and the liquid reaches the corneous layer, which it pushes before

it, and thus forms the vesicle. In sudamina the sweat collects between the strata of the corneous cells, the rete remaining unaffected. Vesicles are either simple, that is, have a single chamber, as in sudamina; or are compound, having two or more chambers, as in variola. Vesicles are generally present in considerable number on the body, and are either irregularly distributed, as in eczema, or collected to groups, as in herpes. Their course is generally brief, they either become ruptured, or the contents dry up, or they become pustules by increase in the number of lymphoid corpuscles.

BULLÆ; BLEBS.

Definition.—Irregularly shaped elevations of the epidermis, varying in size from a bean to that of a goose egg, and containing serous or sero-purulent contents.

Bullæ correspond in all respects as regards mode of formation, appearance and nature of contents with vesicles. Their only difference is that of size. Recent bullæ are clear or pale yellow in color. Later the contents change to a whitish or yellowish color, or if blood is intermixed, the color is reddish or brownish. Bullæ vary greatly in size, ranging from that of a bean to that of a goose egg, or even larger. Frequently large and small bullæ are found side by side. They are at first generally fully distended from the rapid effusion of serum, but soon the walls become flaccid if the bulla does not burst or become ruptured. The wall generally rises abruptly from normal skin, an inflammatory areola being rarely present. Bullæ are usually one-chambered, but sometimes are compound. They have their seat in the epidermis the same as vesicles. They usually have strong walls and do not readily burst, but in some cases, as in pemphigus foliaceus, they tend to rupture early. They are met with in a number of affections.

PUSTULÆ; PUSTULES.

Definition.—Circumscribed, rounded, flat, acuminated or umbilicated elevations of the epidermis caused by collections of pus.

Pustules either originate as such, or result from the transition of vesicles into pustules by continued increase in the number of formed elements—emigrated corpuscles without a corresponding increase in the amount of serum. Collections in which the pustular stage has not been fully reached are called vesico-pustules. Pustules may form in the mucous and horny layer, as in variola; or around sebaceous glands, as in acne; or around hair follicles, as in sycosis. They generally are surrounded by an inflammatory areola, the extent of which differs in different cases. They may consist of a single chamber, or be compound, as in variola. Sometimes they contain blood as well as pus. In disappearing they dry up and form variously sized yellowish, brownish or blackish friable crusts. If the pus collection has its seat in the epidermis only, the part will heal by new epidermis, but if a portion of the corium has been destroyed by the inflammatory process its restitution can occur only by cicatricial tissue. Examples of destruction of limited areas of the corium occur in acne and variola. The development of pustules is usually attended by considerable subjective symptoms, as burning and pain at the seat of the eruption. Their course and significance depend upon their causation and not upon their special anatomical structure, as pustules with similar anatomical structure may represent widely different affections. Pustules are present in acne, sycosis, impetigo, echthyma, impetigo contagiosum, eczema, variola, scabies and syphilis.

POMPHI, WHEALS, URTICÆ.

Definition.—Wheals are round, ovalish or elongated, firm elevations of the skin of a pale or slightly reddish color, and evanescent character and attended by much itching.

Wheals vary in size from a few lines to several inches in diameter. They are round, ovalish, linear or band-like in form. In children they are often very small, like the bite of an insect, and may contain a little serum on the apex. Sometimes by peripheral spreading of the eruption and clearing up of the central part rings are formed, and if neighboring rings coalesce the erruption assumes a gyrate form. When the

wheals are very small they are usually pale in color, but if larger the central part is pale and the periphery of a reddish or pinkish tinge. Sometimes their surface presents a glistening appearance. They may exist singly, but there is generally a considerable number of them, and when closely seated have a tendency to coalesce and form large patches. They are always attended by much itching, heat and tingling in the part. Scratching causes the existing ones to increase in size and new ones to develop. They disappear rapidly and without desquamation. They are closely related to simple erythema. They consist in a serous exudation into the corium and rete. Occasionally a little blood is mixed with the serum. The first part of the pathological process seems to consist in an irritation and contraction of the capillaries ; this contraction is very soon followed by a dilatation of the capillaries and effusion of serum into the tissues. At the periphery of the area of exudation the capillaries are in a state of spasm, and when this spasm is past the wheal disappears almost as suddenly as it arose. Sometimes the amount and rapidity of exudation is so great that the epidermis is elevated in the form of a bulla, as occurs in urticaria bullosum. The well-known nettle rash shows typical wheals.

TUBERCULA ; TUBERCLES.

Definition.—Circumscribed, pea to hazel-nut or larger sized, firm, rounded, or acuminated, deeply-seated or elevated formations in the skin.

The term tubercle is applied to any mass too large to be called a papule, but not large enough for the designation of tumor. There is no sharp line between the size of a papule and a tubercle ; in fact, many of the tubercles we meet with commenced as papules, as in the case of the tubercles in secondary syphilis. In many of these cases of syphilis one may see all grades, from a small papule to a large tubercle, and in other cases one is in doubt whether to describe the case as one of papular or tubercular syphilis.

In shape, tubercles are generally circumscribed, and may be

roundish, flat, conical or irregular in outline. As they usually owe their origin to an inflammatory cell-growth, they are generally reddish in color, but may be normal, as in molluscum contagiosum, or black, as in purpura with considerable hæmorrhage. They are firm in consistence and very similar in structure to papules. They may have their seat deep in the skin, when they can be recognized only by the feel, or they may be elevated above the general surface. They are usually inflammatory or neoplastic in origin, and are met with in syphilis, lepra, carcinoma, tinea trichoplytina barbæ and other affections. Their course depends upon their nature; usually they ulcerate, and are followed by scars.

PHYMATA; TUMORS.

Definition.—Variously shaped and sized tumor-like formations in the skin.

These growths vary in size from a walnut to that of a child's head; are usually semi-globular in shape, and have their origin either in the subcutaneous tissue, or there and in the corium. From the deep tissue they push upward, and form either elevations or pendulous tumors. Their color is usually that of the skin. Their constitution differs according to the seat of origin and nature of the pathological process. They may arise from the sebaceous glands (milium), or as new growths in the corium, subcutaneous tissue, bloodvessels or lymphatics.

SECONDARY LESIONS.

SQUAMÆ; SCALES.

Definition.—Collections on the cutaneous surface of loose, dry, epidermic scales.

In normal conditions there is always some desquamation of the uppermost corneous cells occurring, their place being subsequently occupied by new cells from beneath. In pathological conditions, it is the rapidity of the formation of epidermic cells, or an interference with the normal horny transformation process that gives rise to the collection of scales on the surface.

The desquamation occurs either in the form of thin, fine, bran-like scales (furfuraceous desquamation), as occurs in squamous eczema and tinea trichophytina corporis ; or as larger, thin, shining, dry or fatty scales, as in psoriasis or seborrhœa sicca ; or as large, thin lamellæ, as in pityriasis rubra (membranous desquamation); or as thick, plate-like masses, as in ichthyosis ; or, finally, as large, adherent, parchment-like masses, as occurs especially on the hands and feet in scarlatina desquamatio siliquosa. They are met with in all inflammatory affections of the skin, and also in some anomalies of growth of the epidermis. In pityriasis rubra, they are formed in immense number. In psoriasis they form heaped up masses of a pearly white color. In seborrhœa they have a shining, greasy appearance from the collection of oil in the cells. In ichthyosis, and in the later stages of lichen ruber, the amount of scaling is very great. In color they are generally whitish or grayish ; sometimes they are shining or glistening. They are generally somewhat loosely attached to the epidermis beneath, but in some cases, as in lupus erythematosus, they are very firmly adherent.

CRUSTÆ ; CRUSTS.

Definition.—Masses of dried serous, or sero-purulent exudation on the free surface.

Crusts arise either from a drying up of the exudation deposited on the free surface from catarrhal inflammation of the skin, as in ordinary or in impetiginous eczema ; or from a drying up of the pus in the affections of the skin associated with the formation of pustules ; or finally, from drying up of the exudation in ulcerative processes, as lupus and the ulcerating syphilide. The color of the crust will depend upon the nature of the exudation. If it is serous, the crust will be thin and gummy or honey-like in appearance ; if it is dried up pus, it will be yellowish or greenish ; if blood is mixed with the exudation, it will be brown or black. Crusts vary in consistence from the thin, friable crust of eczema to the thick, hard, dark crust seated over syphilitic ulcers. The shape of the crust de-

pends upon the nature of the skin upon which it is seated, and their size upon the amount of exudation and duration of the disease. The oyster-shell shaped crust observed in syphilis (rupia syphilitica) is caused by the peripheral spreading of the ulcer at the same time that the central portion still continues in a state of ulceration, and consequently furnishes continuously fresh exudation to push the already formed crust more and more outward. In some cases scales and crusts become mixed together, and form what are called crustæ lamellosæ.

RHAGADES ; FISSURES.

Definition.—Linear fissures of the epidermis or epidermis and corium.

Fissures arise from a rupture of the epidermis or corium of a cutaneous or mucous surface. It is caused by the action of the muscles on a skin which, from inflammation, has become infiltrated and inelastic. It is consequently met with especially on the flexures of joints, on the palms of hands and soles of feet, upper eyelid, juncture of nose with upper lip, at the back of the ear, at the angles of the mouth, and on the tongue. It can also be caused by external applications which produce too great dryness of the epidermis as occurs after the use of strong soaps. In the latter case the fissure will extend only through the epidermis, and not into the corium. Fissures may be long or short, broad or narrow, superficial or deep, straight or crooked. If deep they will have steep margins and a bloody or purulent base. Fissures are met with especially in chronic eczema of the hands ; in lichen ruber, scleroderma and syphilis.

EXCORATIONES ; EXCORIATIONS.

Definition.—Greater or less loss of epidermis from traumatic influences or chemical agents.

Excoriations are almost invariably caused by scratching on account of itching in connection with some skin diseases. The excoriation may consist in a loss of only a portion of the epidermis, or it may extend to the corium, or even include some

loss of the papillary connective tissue, although if the corium was affected to any appreciable extent it would be an ulcer. The extent of the excoriations depends entirely upon the force employed in scratching and the susceptibility of the skin. If the epidermis is already injured by an inflammatory process, as eczema, scratching will cause deeper excoriations than if it was in a normal condition. Long-continued scratching of a part leads to inflammation, infiltration and pigmentation of the skin. Unless the corium is affected, excoriations heal by new epidermis. The form and situation of excoriations often assist in forming a diagnosis. In pediculosis corporis long excoriations are found especially on the neck and shoulders. In scabies they are small, round and found on the fore-arms, abdomen and thighs.

ULCERA; ULCERS.

Definition.—Irregularly sized and shaped excavations in the skin the result of a suppurative process.

A cutaneous ulcer is a suppurative process on the free surface of the skin, accompanied by loss of substance of the corium, and with a disposition to extend in size from molecular disintegration of the skin at the margin of the ulcer. A laudable suppurating and granulating wound, or a loss of substance which affects the epidermis alone, as occurs in eczema, is not an ulcer. An ulcer is never a primary formation, but is always the result of some other condition. Wherever an ulcer is to arise there must be at that place either an inflammatory or neoplastic production formed which has within itself the conditions of a molecular disintegration and consequent ulcer formation, or the normal process of recovery is interfered with by some local or general influences (Kaposi). Lupus, lepra, carcinoma and tubercular syphilides are predestined from their nature to undergo ulcerative degeneration. Local influences which produce ulceration by increase of the inflammatory processes are local interference with the circulation, varicose veins, tearing, bruising, scratching, plasters, irritation of the granulations by saliva,

fæces, etc. Among distant causes of ulceration are diseases of the heart, and dyscrasic conditions producing impoverished blood. The inflammatory ulcers are those which are the result of dermatitis of any kind, the best example being the so-called varicose ulcer, scrofulous ulcers, and the syphilitic ulcers including the chancroid. The ulcers arising from new growths are those of lupus, epithelioma, carcinoma, and lepra. As objective symptoms in every ulcer we should study the form and size of the ulcer, the mode of spreading, nature of margin and base, nature of secretion and condition of the surrounding tissues. Small ulcers are generally round; larger ulcers of irregular form, deep, and unevenly pitted, or more superficial with smooth base. In size they may vary from that of a bean to that of the half or even whole of an extremity. The base is usually of a grayish yellow color, infiltrated with pus and flat or unevenly pitted. The margins are perpendicular, sloping or undermined, movable or firmly attached, soft or hard. The secretion is either copious or sparse, viscid, purulent or sero-purulent and dries into crusts of different colors and thickness, depending on the nature and amount of the secretion. Outside the margin and base the skin in inflammatory ulcers is usually inflamed; in ulcers from new growths it is generally normal. In every ulcer there is a stage of destruction corresponding to the period of extension; and, if it heals, a stage of reparation. In the chancroid ulcer the stage of destruction corresponds to the stage of contagiousness of the secretion; in the stage of reparation the secretion is no longer contagious. Ulcers heal by the formation of cicatricial tissue, leaving permanent scars.

CICATRICES; SCARS.

Definition.—Variously sized and shaped, reddish, brownish or whitish new formations of connective tissue occupying the place of lost normal tissue.

In appearance scars are either smooth and soft, or uneven, contracted, band-like, and freely movable or firmly attached to the under-lying tissue. They are either on a level with the

surrounding skin (normal scar) or depressed (atrophic scar), or elevated (hypertrophic scar) and are devoid of the furrows, lines, pores and hairs of a normal skin. Recent scars are reddish in color, afterwards they gradually become paler, and finally white. Sometimes they are pigmented, especially at the margin. The form of an ulcer depends upon the form of the previous ulceration or wound of the part. There is no special form of scar pathognomonic of any one disease; nevertheless, a consideration of their number, situation, and form, often assists in making a correct diagnosis. The kidney-shaped scar is generally the result of syphilis. So are also scars with sharply limited margins and scalloped edges, as such a condition shows that the preceding ulceration has commenced from two or more closely-seated centres and has spread peripherically.

For the formation of a scar there must be previous loss of corium; loss of epidermis alone is not followed by cicatricial formation. Scars are new formations of connective tissue with a thin covering layer of epidermis. It contains in addition, bloodvessels and lymphatics, but no nerves, sebaceous glands, hair follicles or sweat glands.

PIGMENTATION.

Pigmentation is an increase in the color of the skin in consequence of chronic hyperæmia, inflammation, new-growth formation or trophic disturbance. It may be temporary or permanent.

The etiology, diagnosis and treatment of diseases of the skin in general will be here but briefly alluded to, as they will receive full consideration when treating of the individual diseases. The limits of the manual will not permit of unnecessary repetition.

ETIOLOGY OF SKIN DISEASES.

Diseases of the skin are either idiopathic or symptomatic. All of the acute contagious inflammatory diseases; many of the non-contagious inflammatory diseases, as urticaria, acne,

herpes, pruritus, chloasma, etc., are symptomatic either of a general blood condition, or dependent upon disorder of a non-cutaneous organ or system. Among the idiopathic affections are to be included diseases of the sebaceous glands; most of the non-contagious inflammatory diseases; hypertrophies, atrophies (?), tumors and parasites. Many of the idiopathic inflammatory affections are increased in intensity or prolonged in duration by pathological non-cutaneous conditions, such as intestinal disorders and an over-acid condition of the system. Occupation, clothing, mode of living, contagion, hereditary conditions, may all be factors in the production of a cutaneous lesion. The different causes and the symptomatic or idiopathic nature of the lesions will be noted in connection with each disease.

DIAGNOSIS OF SKIN DISEASES.

To be a successful diagnostician of diseases of the skin, the physician must be acquainted with the anatomy of the skin, with the pathological processes concerned in the formation of both the primary and secondary lesions, and with the pathology of inflammation, hypertrophy, atrophy and tumors. If he understands these and has a classification to guide him and a good text-book, the subject will not prove difficult to master. For instance suppose he has to deal with a case of hæmorrhage into the skin, he can at once exclude by his knowledge of pathological processes all the diseases included in the classification except those under hæmorrhages, and then by the aid of a text-book can soon learn whether it is a case of purpura simplex, rheumatica, hæmorrhagica or a case of hæmatidrosis. And so with all the other affections. If he finds that the lesion is an inflammatory one and not belonging to the acute contagious inflammatory disease, he knows also whether it is a papular, vesicular, pustular, etc., eruption, and can at once place it as one of the diseases constituting that particular group, and with the aid of his text-book complete the diagnosis. The physician in learning to diagnose must not therefore rely en-

tirely upon objective symptoms, as color, shape of eruption, etc., but must endeavor also to find out the cause of the objective and subjective symptoms and the nature of the pathological process.

For examining a patient properly, daylight is necessary in many cases, as artificial light changes the color of many of the eruptions, and sometimes renders it impossible to make a positive diagnosis. The temperature of the room should not be less than sixty-five degrees Fahrenheit; except in the case of a suspected macular syphilide which is made more prominent if the temperature of the room is colder. The extent of the eruption, its situation, color, form, mode of spreading, duration, condition of the skin of the affected part, subjective symptoms, age and history of patient, should be accurately learned and noted. To determine the nature of the primary lesion, the eruption is to be examined, and if there is but a single patch on the body, the earliest lesion will be found generally at the periphery. For instance, a squamous patch of eczema may resemble very closely a patch of psoriasis, but close examination will almost invariably detect a few vesicles at the periphery and thus settle the diagnosis. Examination of the whole body is advisable, when permitted, as the person might have more than one cutaneous disease; and again it may be necessary for diagnosis in a doubtful case. Inquiry should also be made as to his occupation, mode of living, nature and place of habitation and the kind of medicine, if any, which he is taking.

With all these observations properly carried out, it may still be impossible to diagnose the eruption the first time it is seen; and a further study of its course and nature may be necessary even with an experienced dermatologist. These very difficult cases are rare and usually represent anomalous forms of eruption.

TREATMENT OF SKIN DISEASES.

The treatment will be fully explained in connection with the individual diseases. I only wish here to remark that a knowledge of general medicine—a practical knowledge and not a

book one alone—is absolutely necessary for the successful treatment of many skin diseases. Among all the specialties in medicine and surgery, dermatology is the least independent of general medicine and general pathology.

No cutaneous lesion can be cured too rapidly ; there is never any danger of the general health or any organ suffering from the removal of the skin disease ; but evil results may follow the long continuance of even an ordinary eczema, as I have observed many times in the case of young children. The constant worriment from itching interferes with their appetites and reduces their general nutrition, so that a bronchitis, accidentally occurring, is liable to become chronic, and may lead to a broncho-pneumonia and death.

The purely local diseases are to be treated by local measures alone, but all others require local and general treatment. Every case must be studied and treated according to its individual peculiarities. Routine treatment will fail in many cases. The local treatment will depend upon the form of eruption and susceptibility of the skin. The internal treatment will consist of special remedies for the eruption and such others as are necessary to bring the general system to a normal physiological standard. Anæmic, chlorotic, or hydræmic persons must have proper food, good air, and tonics, iron, quinine, cod-liver oil, etc., as the individual case requires. Plethoric or fleshy (fat) persons require restricted diet, alkalies, as sulphate of magnesia or Carlsbad water, exercise, and avoidance of beer or wine. Rheumatic or gouty subjects must be treated for these conditions even if they do not suffer specially from them at the time of the eruption. I have seen a case of ulcer of the leg from varicose veins resist all treatment until iodide of potassium was given on account of a history of previous rheumatism, upon which the wound healed very rapidly.

CLASSIFICATION OF SKIN DISEASES.

For the study of skin diseases a classification is absolutely necessary. A number of classifications have been proposed, but that of Hebra's is the best for purposes of diagnosis. With the exception of some few changes rendered necessary by our increasing knowledge of the subject, the following classification is that of Hebra. The classification proposed by Auspitz, although to be commended for advanced dermatologists, is useless for teaching purposes. That adopted by the American Dermatological Association was decided by balloting, and never should have seen the light.

LESIONS OF THE SKIN.

A. Primary Lesions.

1. Maculæ ; spots, macules.
2. Papulæ ; papules.
3. Vesiculæ ; vesicles.
4. Bullæ ; blebs.
5. Pustulæ ; pustules.
6. Pomphi ; wheals.
7. Tubercula ; tubercles.
8. Phymata ; tumors.

B. Secondary Lesions.

1. Squamæ ; scales.
2. Crustæ ; crusts.
3. Rhagades ; fissures.
4. Excoriationes ; excoriations.
5. Ulcera ; ulcers.
6. Cicatrices ; scars.
7. Pigmentation.

CLASSIFICATION OF DISEASES OF THE SKIN.

Class I. **Anomaliæ Secretionis et Excretionis.** Disorders of Secretion and Excretion.

" II. **Hyperæmiæ.** Hyperæmias.

" III. **Exudationes.** Exudations.

CLASS IV. **Hæmorrhagiæ.** Hemorrhages.
" V. **Hypertrophiæ.** Hypertrophies.
" VI. **Atrophiæ.** Atrophies.
" VII. **Neoplasmata.** Tumors.
" VIII. **Neuroses.** Neuroses.
" IX. **Parasitæ.** Parasites.

Class I. Anomaliæ Secretionis et Excretionis. Disorders of Secretion and Excretion.

- SEBACEOUS GLANDS.
  - Abnormal Secretion
    - Seborrhœa
      - oleosa.
      - sicca.
    - Asteatosis cutis.
  - Abnormal excretion
    - Comedo.
    - Milium.
    - Sebaceous cyst.
- SWEAT GLANDS.
  - Of quantity
    - Hyperidrosis.
    - Anidrosis.
  - Of quality
    - Bromidrosis.
    - Chromidrosis.
  - Of excretion
    - Sudamina.

Class II. Hyperæmiæ. Hyperæmias.

- A. ACTIVE.
  - Erythema congestivum
    - idiopathic
      - traumaticum.
      - caloricum.
      - venenatum.
    - symptomatic
      - simplex.
      - roseola.
- B. PASSIVE.
  - Livedo
    - mechanica.
    - traumatica.

Class III. Exudationes. Exudations.

- ACUTE CONTAGIOUS INFLAMMATORY DISEASES.
  - Rubeola.
  - Rœtheln.
  - Scarlatina.
  - Variola.
  - Varicella.
  - Vaccinia.
  - Impetigo contagiosum.
  - Anthrax.
  - Equinia.
  - Erysipelas.
  - Syphilis.

NON-CONTAGIOUS INFLAMMATORY DISEASES.

- Erythematous.
  - Erythema.
    - multiforme.
    - nodosum.
  - Urticaria.
- Papular.
  - Lichen.
    - planus.
    - scrofulosus.
  - Prurigo.
- Vesicular.
  - Herpes.
    - febrilis.
    - iris.
    - progenitalis.
    - gestationis.
    - zoster.
- Bullous.
  - Pemphigus.
    - vulgaris.
    - foliaceus.
  - Hydroa.
  - Pompholyx.
- Pustular
  - Acne.
    - simplex.
    - indurata.
    - rosacea.
  - Sycosis.
  - Impetigo.
  - Ecthyma.
- Squamous.
  - Pityriasis rubra.
- Phlegmonous.
  - Furunculus.
  - Anthrax.
  - Abscessus.
- Erythematous, vesicular, papular, pustular, bullous.
  - Eczema.
  - Dermatitis.
    - calorica.
    - venenata.
    - traumatica.

Class IV. Hæmorrhagæ. Hemorrhages.

- Purpura.
  - simplex.
  - rheumatica.
  - hæmorrhagica.
- Hæmatidrosis.

Class V. Hypertrophiæ. Hypertrophies.

PIGMENT.

- Lentigo.
- Chloasma.
- Ephelis.
- Nævus pigmentosus.

EPIDERMIS.

- Callositas.
- Clavus.
- Cornu cutaneum.
- Keratosis pilaris.
- Psoriasis.
- Lichen ruber.

Epidermis and Papillæ.	Verruca. Ichthyosis.
Connective Tissue.	Scleroderma. Sclerema. Morphœa. Elephantiasis. Dermatolysis.
Hair.	Hirsuties.
Nail.	Onychogryphosis.

Class VI. Atrophiæ. Atrophies.

Pigment.	Albinismus. Vitiligo. Canities.
Connnective Tissue.	Atrophia cutis propria. Atrophia senilis.
Hair.	Alopecia. Alopecia areata. Trichorexis nodosa. Atrophia pilorum propria.
Nail.	Onychatrophia.

Class VII. Neoplasmata. Tumors.

Cellular.	Rhinoscleroma. Lupus erythematosus. Lupus vulgaris. Scofuloderma. Molluscum contagiosum. Lepra. Sarcoma. Carcinoma. Epithelioma.
Fibrous Connective Tissue.	Keloid. Molluscum fibrosum. Xanthoma. Lipoma.
Bloodvessels.	Nævus vasculosus. Angioma.
Lymphatics.	Lymphangioma.
Nerves.	Neuroma.

Class VIII. Neuroses. Neuroses.

Hyperæsthesia.	Hyperæsthesia. Dermatalgia. Pruritus.

Class IX. Parasitæ. Parasites.

- **Vegetable.**
  - Tinea trichophytina (parasite—Trichophyton tonsurans.)
    - corporis (or tinea circinata).
    - capitis (or tinea tonsurans).
    - barbæ (or sycosis parasitica.
    - cruris (or eczema marginatum).
  - Tinea favosa (or favus). (parasite—Achorion Schoenleinii)
  - Tinea versicolor. (parasite—Microsporon furfur).
- **Animal.**
  - Scabies (parasite—Acarus scabiei).
  - Pediculosis (parasite—Pediculus).
    - corporis.
    - capitis.
    - pubis.

CLASS I.

ANOMALIÆ SECRETIONIS ET EXCRETIONIS.

Disorders of Secretion and Excretion.

In this class are included all anomalies of secretion and excretion of the sebaceous and sweat glands. The secretion of the sebaceous glands may be abnormally increased (seborrhœa) or abnormally diminished (asteatosis cutis) in amount, or from some cause or other it may not reach the surface in the usual manner, but be retained in some part of the gland structure (comedo, milium, sebaceous cyst.) The secretion of the sweat glands may be abnormally increased (hyperidrosis) or diminished (anidrosis) in amount or changed in quality (bromidrosis, chromidrosis), or not reach the surface, but be retained within the epidermis or duct (sudamina.)

SEBORRHŒA.

Syn., Steatorrhœa ; Stearrhœa ; Seborrhagia ; Acne Sebacea ; Ichthyosis Sebacea ; Cutis Unctuosa ; Dandruff.

Definition.—A functional disease of the sebaceous glands, consisting in an increase in the amount and a change in the quality of the sebaceous secretion, and characterized by the formation of an oily coating or fatty scales on the skin.

Symptoms.—Under normal conditions the sebaceous glands furnish a certain amount of secretion to the hairs and to the general surface of the skin, to give them the necessary softness and elasticity, and to protect the internal organs. This secretion consists principally of free fat, fatty epithelial cells and dry epithelial cell remnants from which the fat has escaped.

Seborrhœa consists in an abnormal excess in production of the fat elements (seborrhœa oleosa) or of the dry, epidermic cells (seborrhœa sicca) or of both combined.

Seborrhœa oleosa appears either in the form of drops of a yellowish color, or as an oily covering to the cutaneous surface, or as thicker or thinner fatty, friable crusts or scales. When drops of oil form, their usual seat is the nose, but they may form on other parts of the body. Crusts are met with principally upon the scalp.

In seborrhœa sicca, which is the usual form encountered, the secretion dries to fatty plates, or to thin bran-like scales, or to a dry yellowish mass.

Seborrhœa is either general or local, that is, it occupies the entire surface or is confined to parts of the body. The vernix caseosa of new-born children is an example of general seborrhœa. The secretion in this case usually dries to thin plates and falls off in a few days. In some rare cases, however, it remains, and drying, forms thick lamellæ, which fix the skin beneath and lead to fissures on the fingers and flexures of the joints. This form of eruption has been described as *ichthyosis congenita neonatorum*. The eyes are fixed from the stretching of the skin, the lips are also fixed, the gums exposed, and the fingers, toes, and external portion of ears undeveloped. These children die soon after birth.

On the scalp of children the sebaceous secretion usually continues to form in excess for one or two years, the amount varying in different cases and forming collections varying from thin scales to thick yellowish crusts or masses. It is often complicated with eczema.

Universal seborrhœa in adults is rare. It appears either as fine scales (seborrhœa tabescentium, pityriasis tabescentium), or as large dry masses or plates overlying each other (ichthyosis sebacea.)

Local seborrhœa is met with principally upon the scalp, forehead, nose, cheeks, hairy part of skin over sternum, mons veneris and genitals, and will be described under the local forms.

Long continued seborrhœa in hairy regions may lead to atrophy of the hair follicles and consequent alopecia. The eruption is usually unaccompanied by inflammation, the skin often presenting a pale or leaden hue. Itching is a prominent symptom in the dry form.

Localized seborrhœa as it occurs upon the scalp, face, body and genitals, requires separate consideration.

Seborrhœa capitis.—This is the most frequent and important local seborrhœa, and appears generally in the dry form. In children it is met with as a continuation of the vernix caseosa condition, and may last a few months or one or two years. It appears on the vertex first, in the form of isolated grayish or yellowish scales and afterward, by an increased collection of sebum, forms thick, yellowish, grayish-brown, cheesy-like, friable, fatty or dry crusts or scabs which may become united to each other and adherent to the scalp. After a short existence they become dark in color from admixture of dirt. These crusts form especially over the anterior fontanelle region where they may form adherent, hard, lamellar masses. If the mass is removed artificially, it quickly re-forms, as the glands are very active. The skin beneath is normal or slightly moist in appearance,never inflamed or discharging unless complicated by an eczema, the result of irritation from decomposition of sebum situated beneath dry crusts. After a few months or one or two years, the gland secretion gradually diminishes in amount, the growing hairs remove the scales, and the part heals spontaneously. In adults, seborrhœa capitis appears either in the form of thin, or thick, yellowish white, adherent lamellar scales from drying up of fatty matter, or, as is generally the case, it appears as thin, whitish, grayish, yellowish or brownish dry loose scales. It generally extends over a considerable part of the scalp, but especially affects the vertex. The scales are always more or less friable and greasy to the feel. The amount of scaling differs in different cases, there may be only a few adherent scales around hairs, or they may be thrown off in such amount as to require frequent brushing from the person's clothes over the shoulders. The skin beneath

is normal in color, or paler, with a dull leaden hue ; especially in chronic cases in elderly chlorotic females ; or slightly hyperæmic, especially at the junction of the forehead with the hairy scalp. Itching is a prominent symptom, and from the irritation produced by scratching, small, localized spots of temporary dermatitis often result. The hair follicles become more or less affected, their nutrition is interfered with, the hair loses its lustre, becomes loose in the follicle and falls out, producing an alopecia. If the seborrhœa is chronic the alopecia may be permanent, the hair follicles becoming destroyed. The course of the disease is chronic, lasting months or years.

The eyebrows, mustache and beard are often affected in the same manner as the scalp.

Seborrhœa faciei.—This occurs especially upon the forehead, nose, temples and chin, and appears either as the oily or dry form, but generally as the former. It is met with principally between the age of puberty and thirty, and is more frequent in females than males. In the oily form the skin has a shining, greasy look, which is easily removed by ether or alcohol, but quickly reforms. Owing to the facility with which particles of dust adhere to fat, the skin is difficult to keep clean, and if not frequently washed has a dirty appearance from the dust collected. The skin itself is normal in color or slightly reddish, the mouths of the sebaceous follicles large, and comedones plentiful. In the dry form the secretion dries to thin or thick crusts or scales, which are firmly adherent and of a yellowish, greenish-brown or blackish color. Removal of the scales with the nails will show that plugs of sebaceous matter extended from the scales into the ducts of the follicles. The skin beneath is normal or hyperæmic. Itching is often present.

Seborrhœa is very frequent on the end of the nose (point and alæ) and adjoining skin. It forms either yellowish to brownish crusts, which are firmly adherent, and provided beneath with sebaceous plugs which dip down into the follicles ; or their thin, dry, adherent scales with similar plugs. The skin beneath is shining and often reddish, the follicle ducts are large and the veins often dilated. Forcible removal of the

adherent crusts sometimes causes oozing of the blood. Eczema, comedones, and acne spots are occasional complications.

Seborrhœa corporis.—On the non-hairy parts of the body the disease differs considerably in appearance from seborrhœa of the head and face. It occurs generally upon the back, between the scapulæ and over the clavicle, and on the hairy part of the skin over the sternum. It appears in the form of roundish or irregular shaped, more or less sharply limited, variously sized patches, which remain isolated or afterward coalesce to form larger patches. They are pale reddish in color, and covered with yellowish or grayish-yellow fatty scales. The amount of scaling varies, though it is rarely abundant, owing to their becoming detached by the friction of the clothing. The scales are loose or semi-detached, and show under the microscope free fat, fatty epithelium and horny epithelium. The entire gland epithelium is sometimes thrown off without the contents altering their relative normal position in the gland—an exfoliation more than a seborrhœa. A patch is sometimes made up of pin-head sized, or larger, isolated spots corresponding to separate sebaceous glands. If these are arranged in a circular form, or if a larger patch clears up somewhat in the centre, the eruption resembles considerably that of ringworm. Acne papules or pustules are often present around the margin of a patch. Over the sternum the patches are usually circular in form and, in my experience, have fewer scales than in patches on the back. The skin is pale-reddish in color, and scraping the patches often causes some oozing of blood. Itching is a prominent symptom. They have a very chronic course.

Seborrhœa of the umbilicus is frequently observed. Here the sebum collects, and, undergoing decomposition, irritates the skin and produces an eczematous condition.

Seborrhœa genitalium.—In this region the condition described as seborrhœa very frequently consists more in the retention of secreted sebaceous matter than in increased activity of the glands. It is met with especially in persons with a narrow preputial orifice. In males the sebaceous matter is found around the glans penis and sulcus, and owing to the warmth and moisture present

readily decomposes and irritates the parts, producing a balanitis or a balano-prostitis. The glans and prepuce become red, swollen, excoriated and painful. There is considerable discharge, and, as the urethral orifice often becomes affected by the inflammation, the condition may resemble very closely a gonorrhœa. In females the smegma collects between the smaller labia and nymphæ and around the clitoris, producing sometimes a balanitis or vulvitis.

Anatomy.—Seborrhœa is a functional disease of the sebaceous glands ; there is increased secretion, but no inflammation. If the process is chronic it leads to chronic degenerative changes, and, in consequence, there is finally atrophy of the sebaceous glands and hair follicles and more or less permanent alopecia. In seborrhœa of the body there is, in some cases slight nutrition changes in the peri-glandular tissue, as shown by the redness of the skin and the few lymphoid corpuscles occasionally present in the crusts.

Etiology—Vernix caseosa, and the continuation of this condition, as observed on the heads of children for the first one or two years of life, may be regarded as physiological. Seborrhœa proper sometimes follows on a part which has been attacked by an inflammatory process, as erysipelas, variola and eczema. Seborrhœa of the scalp frequently follows conditions associated with a depraved state of the general nutrition, as carcinoma, tuberculosis, scrofulosis, acute exanthemata, and typhus ; or occurs in consequence of an anæmic or chlorotic state of the system.

It is more frequent in females than in males, and is especially frequent about the period of puberty. Disorders of menstruation have been noted to be often present. Exposure to heat assists in increasing the activity of the process in seborrhœa faciei. Persons with light hair and complexion usually have the dry form, and those with dark hair and complexion the oily form.

Diagnosis.—Seborrhœa of the scalp may resemble eczema, psoriasis, or ringworm. In eczema the eruption is not usually confined to the scalp, but tends to invade the forehead, neck,

and back of the ears. The scales are usually more numerous, are not greasy, but composed of inflammatory products and epithelial cells; there is great itching; the glands of the neck are frequently enlarged, which does not occur in seborrhœa, and the skin is not pale, but red and inflamed. In psoriasis the eruption rarely extends over the whole scalp, occurring usually in patches, which are sharply limited and covered by dry, shining scales seated upon a reddish base. There is usually psoriasis patches on other parts of the body. In both psoriasis and eczema the hair nutrition is unaffected. In ringworm there is an eczematous condition present, the patches are circular in shape, the hairs are broken off, and the fungus is easily detected by means of the microscope.

Seborrhœa of the face resembles somewhat erythematous lupus, eczema, psoriasis, or a commencing epithelioma of the rodent form. In lupus the scales are fewer and more firmly adherent, the patch is sharply limited, the growth is very slow but continuous, except in the discoid form, there is new cicatricial tissue to be observed replacing the normal structure of the part. The diagnosis between seborrhœa and eczema and psoriasis has been given above. In that form of epithelioma which supervenes upon a verrucca senilis, or commences like a congestive seborrhœa, it is sometimes impossible, in the earliest stage, to separate it from a seborrhœa sicca. Usually in epithelioma the patch is sharply limited at the margin, and small in extent, and there is a slight atrophy to be observed. If the pin-head sized, dense, waxy-like nodules are present, then the diagnosis is easily made. Seborrhœa of the body may resemble any of the above diseases, or tinea versicolor and ichthyosis. In ringworm the patches are circular in form, sharply limited, spread rapidly, the centre soon heals, the peripheral part contains indications of inflammatory papules or vesicles, the scaling is slight, and consists of exudation and dry epithelium, and the skin is in a more or less inflamed condition. Ichthyosis is an hereditary affection; the scaling is general and permanent, the scales are dry, and the whole skin feels dry and harsh. Seborrhœa is generally local, the scales are easily removed, are

greasy, the other parts of the patch are normal, and the disease is curable. In ichthyosis, the skin, upon removal of the scales, is pale and dry; in seborrhœa it is smooth, soft, and often reddish.

Seborrhœa of the genitals may be mistaken for gonorrhœa. The swollen condition of the glans, the excoriations in the sulcus, the sero-mucus nature of the urethral discharge, and the history of the case—the urethritis being secondary to the balanitis, are sufficient for the diagnosis.

Prognosis.—Hereditary universal seborrhœa, apart from vernix caseosa, is a fatal affection, the children dying soon after birth. Seborrhœa of adults is a chronic, but also a curable affection, unless the result of such diseases as carcinoma and tuberculosis. Many cases undergo spontaneous cure. If seborrhœa of the scalp continues any length of time it produces temporary or permanent alopecia. In cases resulting from chlorosis, scrofula and disorders of menstruation, it is difficult to cure.

Treatment.—The treatment of seborrhœa is both constitutional and local. The constitutional treatment depends upon the special pathological condition present. If carcinoma or tuberculosis is present no form of treatment will have a permanent effect. If the person has a scrofulous or lymphatic constitution, tonics, with cod-liver oil and good hygienic conditions, are necessary. If anæmic or chlorotic, iron, alone or in combination with arsenic, together with good food, pure air and out-door exercise, are of marked benefit. If occurring at the age of puberty, in persons otherwise healthy, a mixture containing sulphate of magnesia, sulphate of iron, dilute sulphuric acid, and infusion of quassia (the mistura ferri acida of Startin) is of benefit. The local treatment will depend upon the irritability of the affected skin, the amount of crusting or scaling, and the duration of the disease. In young children the crusts should be removed by the use of oil (olive oil or sweet oil) in the following manner: If only a small amount of crusting is present, the oil can be thoroughly rubbed into the crusts, and in a few hours the part can be washed clean by means of soap and warm water, and an

astringent ointment, as oxide of zinc, applied. If the crusts re-form to any exent, the same mode of treatment can be followed every day until the part is normal; but generally all that is required is to use the soap and water, and ointment on the subsequent days. The soap should be of good quality, such as the elder-flower soap of Low, Son & Haydon, lest the skin becomes irritated and eczema be produced.

If the crusts are very thick the oil should be well rubbed in several times of an evening, and allowed to remain on the head until the following morning; a flannel cap and bandage protecting the bed clothes and preventing the oil from escaping. The head is washed and treated in the morning in the manner already described. The soaking in oil operation is to be repeated as often as necessary to keep the head free of crusts. In adults the same plan of treatment is followed. The crusts must always be removed before applying remedies to the scalp. In males the hair should be cut short, although this is not absolutely necessary and should not be recommended in the case of females. If but a few scales are present, the oil can be applied with a stiff brush and the head washed soon afterward with soft soap and warm water. After drying thoroughly, an ointment or lotion should be applied for the cure of the disease. If there is but slight seborrhœa, astringent ointments, as zinc ointment with glycerine and bismuth, or a sulphur ointment, one to two drachms to an ounce of lard, or the red oxide of mercury, two grains, or calomel five to ten grains to an ounce of vaseline are of benefit. Alkaline lotions, especially of borax or ammonia, are of decided benefit by allaying itching and hindering the formation of scales. Alcohol alone, or combined with carbolic acid or glycerine or castor oil, or all combined, as in the following formula, can be employed. ℞. Ol. ricin., ʒ ss; acid. carbol., gtt. 20; alcohol ℥ iss; ol. amygdal. am. ʒ ii. In cases of dry seborrhœa of the scalp without much scaling, but with itching and a tendency to the production of alopecia, I have often used the following with good results: ℞. Spir. ammon. aromat; tinct. cantharid; liq. potas. arsenitis, āā ℥ ss; glycerini, ʒ i; aquæ rosæ, ℥ vi. Sig. To be well rubbed into

the scalp once a day. If there is much itching, the head should first be washed with borax or ammonia and water. Usually it is only necessary to moisten the part sufficiently to enable one to dress the hair. Occasionally oil of cade, one drachm to an ounce of zinc ointment, acts well in these scaly cases attended by unusual itching. Whenever the skin becomes tense, shining, dry, an oil should be applied. I prefer fresh beef marrow or pure salad oil.

In obstinate cases, with a tendency to an accumulation of a large amount of secretion, it is generally necessary to follow the plan of treatment laid down by Hebra. The crusts are to be removed by first rubbing or soaking them thoroughly with oil several times at short intervals, and then covering the scalp with a flannel cap, and over that a bandage. This remains until the following morning, when the scalp is washed with soap and water. Ordinary soft soap is generally sufficient ; if not, then use the spiritus saponis kalinus of Hebra, made by digesting for twenty-four hours one part of green soap and two parts of alcohol and flavoring with a few drops of an essential oil. The soap or mixture is rubbed on the scalp, and the part thoroughly washed and rubbed dry, using warm or cold water applied with a flannel. The soap is then removed by clear water, and the scalp dried. The skin is now red, dry, shining, tense, so that it is necessary to apply an oil or pomade to relieve the unpleasant feeling. After a few days, when the skin is no longer tender, the lotions or salves previously recommended can be employed. This operation of washing is to be repeated as often as necessary to remove crusts. The active friction with the flannel and the removal of the crusts removes all the hairs which were loose in the follicles, or sticking only in the crusts, and consequently the hair of the head appears much thinner than before the washing. Patients must be informed of this beforehand, otherwise they will regard it as a result of the treatment. Whatever plan of treatment is followed, it must be employed faithfully until the scalp has returned to a normal condition.

Seborrhœa of the body and face requires the same treatment

as that described for the scalp, only the crusts are more easily removed.

Seborrhœa of the genital region demands cleanliness, frequent washing with water, retraction of the prepuce several times a day, behind the sulcus for a few minutes, until the part becomes dry by exposure to the air, and drying or astringent powders, as bismuth, oxide of zinc, starch, lycopodium. If there are excoriations, an ointment of zinc or diachylon, spread on linen, should be used. In all cases, washing of the inflamed part with the urine, by grasping the foreskin and preventing the escape of urine until the prepuce has been fully distended, is to be recommended.

ASTEATOSIS CUTIS.

Syn., Asperitudo cutis.

Definition.—An affection of the skin characterized by an abnormal diminution in the amount of sebaceous matter secreted.

Symptoms.—The affection is hereditary or acquired ; general or partial. As an hereditary condition it is present in ichthyosis, and frequently in severe cases of hereditary syphilis. In these cases the skin is dry, inelastic, and easily fissured ; the hair is also dry, lusterless and falls out easily. Hereditary asteatosis is general in its distribution. Acquired asteatosis may be general or partial. It is met with in chronic marasmic conditions, as that of old age, or as is seen in some cases of cancer and in badly nourished subjects when it is general, or associated with some forms of paralysis and anæsthetic leprosy, when it is partial. An artificial asteatosis is produced by the application of substances to the skin which remove fat, as strong soaps, lye, and water containing lime salts or potash. In these cases the skin is dry, inelastic, easily fissured, perhaps finely scaly or hyperæmic, and, from the absence of the protective sebaceous matter, sometimes eczematous. The skin feels dry in the scaly affections, as psoriasis and lichen ruber, but the dryness is owing to the abnormal collection of dry epidermic

cells on the surface, and not to a deficiency in the activity of the sebaceous glands.

Prognosis.—The prognosis depends upon the cause. If this is removed the asteatosis will disappear. If from imperfect development of the glands, as in ichthyosis, it is incurable.

Treatment.—The oil which keeps the skin soft and elastic is derived mostly from the sebaceous glands, but a small quantity is also furnished by the sweat glands. As we know of no drug which increases the sebaceous gland secretion, and the diaphoretic remedies, as pilocarpin, seem not to increase the oily part of the sweat secretion, we are compelled in cases of asteatosis to rely upon the external application of an animal or vegetable oil, as almond oil, palm oil, vaseline, fresh fat to keep the skin soft and pliable. If the condition depends upon some affection, as psoriasis, the latter must be treated at the same time. For the dry, brittle hair the same treatment is required as for the similar condition of the skin.

COMEDO.

Definition.—An affection of the sebaceous glands consisting in dilatation of the duct with retention of sebaceous matter in the lumen, and characterized by yellowish or blackish pin-point to pin-head sized spots corresponding to the orifices of the glands.

Symptoms.—Comedones are seated at the orifices of the sebaceous glands and appear as pin-point to pin-head sized yellowish, yellowish white or blackish points which correspond to the orifice of a sebaceous gland. Unless there is retention of a considerable amount of sebaceous matter in the glands they are not elevated above the level of the skin. By lateral pressure the sebum can be expelled in a thread-like form, and, as the end has a black color from dirt the whole mass resembles somewhat a worm in appearance. From this resemblance the laity frequently speak of this eruption as "black worms in the skin." In simple comedo there is no inflammation around the glands.

When this occurs the condition is called acne. The number of points present varies greatly in different cases. There may be only a few or the whole face or shoulders may be studded with them. They are either disseminated or grouped, though usually the former. They are met with especially upon the forehead, nose, temples and shoulders; situations where the sebaceous glands are well developed and the hairs fine. The eruption is generally combined with seborrhœa oleosa. The course of the disease as a whole is variable. If untreated it may last several years. With advancing age it tends to spontaneous cure. The individual points disappear after a short duration to be replaced by a new collection in the same duct; or new points form in other glands. Frequently the retained mass, either from pressure or irritation from chemical changes in the sebum, produces a peri-follicular inflammation and consequent acne.

Anatomy.—Comedo consists of dilatation of the lumen of a sebaceous gland by a collection of retained sebum. The dilatation may take place either in the duct or in the gland portion proper. When occurring in the duct it may be either at the external portion or deeper down, the orifice remaining normal. Usually there is some dilatation of both duct and gland proper. The longer the comedo exists the greater will be the dilatation in the gland. The retained mass consists of a peripheral part made up of epidermic cells of the duct and hair root sheath, and a central part consisting of fatty epidermic cells of free fat, cholesterine crystals, detritus and one or more lanugo hairs, either bent upon itself, curled up inside the gland, or broken into two or more pieces. This central mass, with the exception of the hair, comes from the sebaceous gland. Occasionally the parasite, acarus folliculorum is present, but has no part in the production of the pathological condition. The black point is caused by dirt, not by natural pigment, and the discoloration extends but a short distance on the plug. In Fig. 21 is represented a section of a comedo in which both the duct and gland proper is dilated. The contents of the gland were much degenerated, the central part

consisting mostly of detritus. Three pieces of hair are seen within the gland. The surrounding tissue was normal.

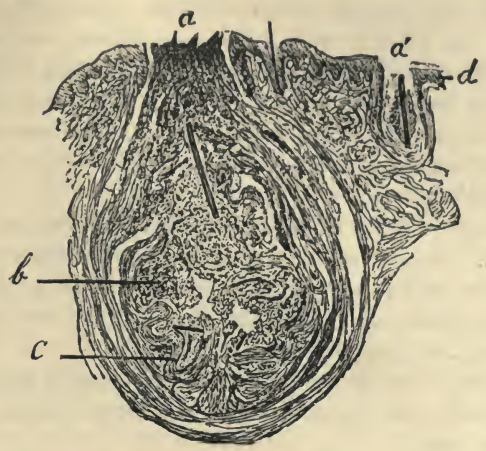


FIG. 21.—Vertical section of a large and small comedo: *a*, black point at orifice of the sebaceous gland; *a'*, orifice of a sebaceous duct and hair follicle. The orifice is somewhat dilated and the end of the plug discolored; *b*, degenerated epithelium and detritus in sebaceous gland; *c*, collapsed wall of sebaceous gland.

Such a condition of the gland contents as is here observed would lead to inflammation and destruction of the whole gland structure. That this does not always occur is shown by the frequency with which plugs form in succession in the same orifice, perhaps a number of times.

Etiology.—Comedo is intimately associated with the period of rapid development of the sebaceous glands and hairs. It is most frequent at the period of puberty and lasts until the age of twenty to thirty, ceasing as a rule earlier in females than males. Disorders of digestion, constipation, chlorosis, scrofulous conditions and disorders of menstruation are all to be regarded as indirect causes of the eruption. The skin of the part affected often seems to lack tone, it is muddy looking, œdematous like, and oily from a seborrhœa oleosa. The unstriped muscle bundles evidently contract sluggishly. The lanugo hairs which grow very actively at the period of puberty, and whose shaft in its upward course assists in bringing the

sebaceous gland secretion to the free surface, are often found curled up within the gland, and in consequence, the means for expulsion are probably often reduced below the necessary amount. In persons with seborrhœa oleosa, the neglect of washing the face sufficiently often with a strong enough soap to remove the oil is often followed by comedo formation. Cases of comedo resulting from working in an atmosphere of tar or dirt are examples of mechanical obstruction to the exit of the sebaceous matter.

Diagnosis.—Comedo may be confounded with acne punctata or milium. In acne there is always a peri-glandular inflammation present, and in simple comedo it is absent. In milium there is no black point or dilated duct and the sebaceous contents cannot be squeezed out as in comedo.

Prognosis.—The prognosis is always favorable, the condition can generally be removed in a few weeks, but it may last months or years.

Treatment.—The treatment is constitutional and local. Dyspepsia, constipation, menstrual disorders, or a scrofulous constitution, if present, must receive appropriate treatment. Easily digested food, avoidance of acids or any thing that tends to produce an acid dyspepsia, and proper outdoor exercise, with frequent bathing, are to be ordered. If the bowels are constipated and the patient robust, saline aperients, with a bitter infusion should be given ; or, if they are chlorotic, or of a lymphatic constitution, iron, cod-liver oil and saline aperients. A pill composed of iron, aloes and nux vomica is also useful in the latter case. Ergot internally, as for acne, is sometimes of advantage.

Locally the comedo plug can be removed by perpendicular pressure with a watch-key, or by lateral pressure between the finger-nails, but as this is a troublesome procedure if there are many comedoes present, it is best to wash the face well with soft soap and warm water, using considerable friction. The soap is to be put on a piece of flannel and this dipped in warm water and then applied briskly to the face for a few minutes. If necessary the soap can be combined with alcohol. The soap

is removed with warm water, the face then dried and a stimulating application, as a sulphur ointment or alcohol, applied. If a sulphur ointment is used it should be left on over night, washed off in the morning and the skin powdered with starch or bismuth. The ordinary sulphur ointment may be used, or better, equal parts of sulphur, glycerine, alcohol, carbonate of potash, sulphuric ether and peruvian balsam. If the skin is irritated by treatment use should be made of alkaline lotions or ointments of borax or bicarbonate of soda, or bismuth, or starch powder used. If seborrhœa oleosa is present it must be treated in the manner already recommended. For use in day time a solution of corrosive sublimate in glycerine and alcohol is often of benefit. I use the following: ℞. Hydr. bi-chlor., gr. ii; glycerine, ʒ ii; spir. vini rectif., ℥ iv. This is used after washing the face with soft soap and warm water and then drying it. It is slightly stimulating and astringent. Sulphate of zinc, five grains to the ounce, may be added to the solution if a more astringent effect is desired.

MILIUM.

Syn., Grutum; Acne Albida; Strophulus Albidus; Tuberculum Sebaceum.

Definition.—Milium consists in the formation of small, dense, roundish, whitish, non-inflammatory elevations, situated in the upper part of the corium.

Symptoms.—Probably a large number of the cases reported as milium, have in reality been cases of comedo, in which the retention of the sebaceous matter is retained in the secreting portion of the gland. I would consider the milium or strophulus albidus of children, those white or yellowish collections of sebaceous matter which occur especially on the nose and cheeks, as cases of deep seated comedo. After superficial inflammation of the skin, as erysipelas and pemphigus, somewhat similar collections have been observed and should be classed with them. In these cases the whitish or yellowish substance consists of very similar elements as normal sebaceous secretion, and is clearly in connection with a sebaceous gland as shown

by the gland orifice. In true milium, a sebaceous gland orifice is rarely to be found over the papule; it seems to consist of something imbedded in the skin like a new growth. As will be seen afterward, their contents do not always resemble sebaceous matter, but consist of cells which resemble more the corneous cells of the epidermis.

They appear as pin-head to small pea sized, rounded, flat or acuminated, elevated or non-elevated, hard, firm, whitish or yellowish formations, situated generally just beneath the epidermis. They are found especially on the upper eyelid, cheeks and temples, penis and scrotum. There may be only one or two, or they may be very numerous. They form slowly and having attained a certain size, may remain unchanged for years.

Anatomy.—The majority of authors consider them as resulting from retention of sebaceous matter in one or more acini of the

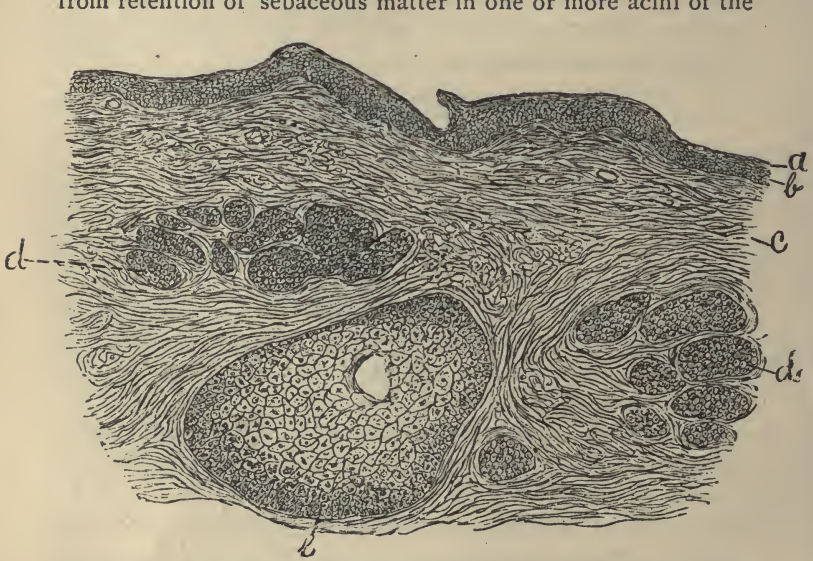


FIG. 22.—Section of a milium, from the face: *a*, corneous layer; *b*, rete; *c*, corium; *d*, milium corpuscle; *e*, sebaceous gland.

sebaceous gland. Virchow and Rindfleisch think they arise from

the hair follicles. My own view, based on the situation of the formation, the nature of the contents in different cases, and the presence or absence of connection with a gland duct, is, that two different conditions have been described under the same term. Where the formation is superficially seated, contains no fatty epithelium, shows no connection with a sebaceous gland when sections are examined by the microscope, and has no duct in connection with it, I think it is a case of miscarried embryonic epithelium from a hair follicle or from the rete. They may be seated near a sebaceous gland without having any connection with it, as in fig. 22. The formation in these cases, according to my experience, consists of more or less lobulated collections of corneous-like cells, the whole collection being surrounded by a more or less perfectly formed capsule, from pressure exercised by the growing new formation, and provided with septa of fibrous connective tissue.

In the cases following pemphigus, erysipelas, syphilis, lupus, the contents consists of fatty epithelium and cholesterine, the epithelium being often arranged in concentric layers around a central fat nucleus.

Etiology.—Until our views on the anatomy of the subject are more definite than at present, we cannot know the etiology. If I am not correct in my view, then milium may follow superficial inflammation of the skin as erysipelas and pemphigus, or result from constriction of a portion of the gland by the cicatricial tissue following the ulceration of lupus and syphilis. It is met with at all ages, but is most frequent during the first two years of life.

Diagnosis.—The affection may closely resemble xanthoma. This eruption appears later in life, is never present in children, the patches are symmetrical, of a yellow color and perfectly soft and pliable, not dense and hard like milium. Milium can be squeezed or easily dug out after cutting the epidermis covering it; in xanthoma this is impossible, the patch can only be removed by the knife.

Prognosis.—The eruption has no influence on the skin in general. It is easily removed by treatment.

Treatment.—In the case of children the spots disappear in a few days, if the skin is washed with soap and water. In those cases observed by Kaposi, occurring after pemphigus and erysipelas, the application of soft soap to produce a slight dermatitis caused them to be exfoliated in a few days. In other cases the epidermis over the spots is to be cut and the contents of the milium squeezed out or scraped out. If they result from a closing of an acinus, the cavity can be subsequently touched with tincture of iodine to obliterate the acinus.

SEBACEOUS CYST.

Syn.—Atheroma; Steatoma; Sebaceous tumor; Encysted sebaceous tumor; Follicular tumor.

Definition.—Variously-sized, elevated, roundish or semi-globular, sharply limited tumors in the corium or subcutaneous tissue.

Symptoms.—These tumors are cysts of the sebaceous glands, and are found principally upon the scalp, forehead, eyebrows, neck, back and scrotum. They may be single or multiple. Their size and shape depend greatly upon their age. At first they appear as small pea-sized roundish masses beneath the epidermis, but as they grow in size they become more elevated, roundish or semi-globular. They may attain the size of a hen egg or larger. They are generally freely movable, and the skin above them is normal or paler than usual from compression of the vessels by the tumor, and more or less devoid of hair. In old persons the surface generally presents a shining, greasy appearance. In some a gland duct orifice can be seen, and in others it is absent. Their consistence varies from firmness to fluctuation, depending upon the condition of the contents as described in the anatomy. They grow very slowly, and having attained a certain size, may remain stationary, or even break down spontaneously and ulcerate, discharging a fœtid, slimy or sero-purulent matter.

Anatomy.—The tumor is a cyst of the sebaceous gland, and is produced by retention of the gland secretion; that is, it is a retention cyst. It consists of a capsule and contents. The

capsule consists of fibrous connective tissue—the normal capsule hypertrophied from irritation exerted upon the capsule by pressure from distension. The contents vary in different cysts. They may be hard and friable, or cheesy, soft, slimy, or fluid. They are yellowish, grayish or whitish in color and with or without a fœtid odor. They consist of epidermic cells, fat drops, cholesterine, detritus, and sometimes a lanugo hair. Sometimes they undergo cheesy degeneration or even have lime salts deposited in the mass. In young tumors the epithelium is often arranged concentrically. They show no tendency to produce acute peri-glandular inflammation like the contents in comedo.

Diagnosis.—They resemble somewhat fatty tumors, osteomata and gummata. Fatty tumors are rare upon the scalp, are seldom multiple, have a doughy feel, are not so freely movable, grow to large size, and have no connection with a sebaceous gland duct. Osteomata are very hard and immovable. Gummata grow rapidly, are painful to the touch, tend to break down and ulcerate, and are not movable like the sebaceous cyst.

Prognosis.—The prognosis is favorable, except in the case of very old, enfeebled persons, in whom they may suppurate and produce serious results.

Treatment.—They may be removed by squeezing out the contents through the duct and injecting the sack with iodine, provided the contents are soft enough to be removed in this manner; or, the skin over the tumor may be destroyed by caustic and the contents of the gland discharged by ulceration; or, the tumor may be excised. The last method is the best. The contents may be removed and the capsule touched with iodine, or better still, remove the capsule and contents and treat the wound like any scalp wound; that is, on antiseptic principles. There is always some danger in removing them in old and enfeebled subjects, but the danger is reduced to a minimum if antiseptics are employed for the wound, and tincture of the chloride of iron given for two or three weeks previous to the operation.

HYPERIDROSIS.

Syn.—Idrosis ; Hydrosis ; Ephidrosis ; Sudatoria.

Definition.—A functional disorder of the sweat glands, consisting in an increased secretion of sweat.

Symptoms.—The conditions which normally cause increased activity of the sweat glands have been already noticed. An increase in the sweat production from subjection to a high temperature, exposure to the sun's rays, or excessive muscular exercise does not constitute a hyperidrosis.

Hyperidrosis may be either universal or local. In the course of some general diseases, as rheumatism, phthisis, acute or chronic fevers and cachectic conditions of the system, sweat is often produced in excessive quantity either over the whole body or in certain regions. Most fat persons sweat in consequence of slight muscular exercise, or when laboring under excitement or nervous irritation, or confined in warm rooms, and in these cases the skin at first is congested and warm, and afterward cool from abstraction of heat by the sweat. Where two surfaces come in contact, as in the groin, perineum, and beneath the mamma, this constant production of sweat in universal hyperidrosis is liable to produce maceration of the epidermis and intertrigo, which later tends to further changes in the tissue and the production of an eczema. Sometimes a papular or papulo-vesicular eruption like an eczema is observed accompanying the hyperidrosis, but usually disappears in a few days by desquamation.

General hyperidrosis may be continuous or temporary, lasting many years, or only for a short period.

Local hyperidrosis occurs especially upon the face, scalp, axillæ, genitals, palms of the hands and soles of the feet. It may be continuous or temporary, and symmetrical or non-symmetrical. Wilson reports a case where there was excessive sweating on one side of the face, and the opposite side of the chest, whilst the rest of the body was dry. It may soon disappear or it may last a great number of years. Hyperidrosis of the axillary region is met with, especially in

women, and is generally associated with increase in the sebaceous gland secretion also. The excess in sweating may be so great as to soak the clothes in that region in a short time. From intermingling of the sweat and sebaceous secretion the clothes are discolored and a most disagreeable odor emanates from the arm-pits. Hyperidrosis of the genital region corresponds in character with that of the axillæ. In the palms of the hands the affection is very frequent, and if severe is very annoying from the inability of the person affected to keep the hands dry. Usually the whole palm is affected. The sweat is clear in color, and can be seen emerging from the orifices of the sweat ducts. The skin acquires a whitish, sodden appearance, and feels cold and clammy. It occurs in both sexes and mostly in young persons. They are usually chlorotic, anæmic, and of a "nervous" disposition, easily excited, etc., but may also be apparently in excellent physical condition. Hyperidrosis of the feet is similar to that of the hands, but owing to the necessity of wearing hose and shoes, the secretion collects in these, especially the former, and, decomposing, gives rise to a more or less disagreeable odor, ("stinking feet"; bromidrosis). The skin is macerated, sodden in appearance, frequently painful to pressure, and fissures form in the flexures of the toes. The sweat at first is clear, but owing to the heat and moisture of the part it quickly decomposes and produces the offensive odor. It is met with in all classes and is generally worst in summer. The hands may or may not be simultaneously affected.

Anatomy.—There are no anatomical changes to be observed in the sweat glands or surrounding tissue. I have examined a number of sections from the palm of the hand, and always failed to detect any thing abnormal in the size of the glands or in the appearance of the glandular epithelium. Virchow found the glands enlarged and the epithelium in a state of fatty degeneration in cases of hyperidrosis in connection with phthisis.

Etiology.—The indirect cause of the excessive sweating is not well known. The direct cause depends on the nerves of the part, and on the state of the circulation, although the latter plays a secondary rôle in regulating the amount of sweat pro-

duced. It is met with in persons suffering from some nervous disorder, as migraine, paraplegia; or, they are simply "nervous." It may arise from an irritation of the cerebro-spinal nerves, or from a paralysis of the sympathetic. There is either a paralysis of the vaso-motor nerves or an active capillary congestion. If the sympathetic is cut in the neck, there will be hyperidosis in the paralyzed part. In a reported case of unilateral hyperidrosis there was congestion and hæmorrhage into the sympathetic ganglion in the neck on the same side. Disease of the lungs and of the right side of the heart, causing congestion of the veins and capillaries, is a cause of excessive sweating. The affection is sometimes hereditary.

Diagnosis.—Seborrhœa oleosa and prickly heat may resemble somewhat hyperidrosis. In seborrhœa the secretion is oily and the eruption itches. In prickly heat the little vesicles are surrounded by an inflamed area, and consequently it is an inflammatory affection. In hyperidrosis there are no inflammatory papules or vesicles formed.

Prognosis.—This will depend upon the cause. If dependent upon debility or some functional derangement of the nervous system, the prognosis is favorable. Hyperidrosis of the axilla, hands, feet, etc., frequently ceases spontaneously. Most of the cases, however, can only be relieved, and not cured.

Treatment—In universal hyperidrosis, besides the treatment for the general condition, as obesity, etc., the local treatment consists in sponging with alcohol or cologne water and using dusting powders, as starch and lycopodium. Warm clothes, hot drinks and inordinate muscular exercise are to be avoided. Where cutaneous surfaces come in contact, as in the axilla, under the mammary gland, etc., care should be taken to keep the sweat from macerating the skin and producing intertrigo or eczema, by the use of powders and absorbent antiseptic cotton. Water for washing the parts should always be hot and medicated.

In hyperidrosis of the axilla, hands, genitals, and mild cases of the feet, the parts should be washed with astringents, as solutions of tannic acid, acetate of lead, sulphate of zinc

(℥ i to aqua ℥ j); corrosive sublimate, alcohol, tincture of belladonna, full strength, tincture of aconite, chloral, 10 to 20 grains to the ounce of water, ammonia diluted in water, and afterward powdered with starch, lycopodium, bismuth, oxide of zinc, carbonate of lead, or salicylic acid with starch (1 to 40). Dr. Thin recommends wearing cork soles, and soaking them and the stockings in a solution of boracic acid and drying them before using. This will assist in preventing decomposition of the sweat and the formation of the disagreeable odor arising therefrom. Lint or absorbent cotton, with the powder, should be used between the toes and fingers, and under the breast. I have seen cases of eczema of the perinæum and axilla, dependent upon irritation from excessive sweating entirely recover in a short period by the use of borated absorbent cotton alone.

In severe cases of stinking feet, Hebra's treatment with diachylon salve is the best. This salve is made by mixing equal parts of lead plaster and olive oil or a petroleum extract (vaseline, cosmoline) together in a water bath over a slow fire. This ointment will be spoken of in the remainder of this book as diachylon ointment. A piece of linen, large enough to envelop the foot and cut to the right shape, is covered with the ointment, care being taken to use plenty of the ointment, and the foot placed upon it. Ointment is also spread on separate pieces of linen and placed between the toes. The whole foot is then enveloped with the linen upon which the salve has been applied, bandaged, and the stockings and shoes put on. On the following day the salve is removed by means of lint and powder, not washed, and new salve applied as on the previous day. This procedure is to be repeated from ten to fourteen days, when powder only is to be applied.

In a few days the skin exfoliates as thick lamellæ or crusts. When this exfoliation is complete, the feet are to be washed and powdered in the manner described for mild cases. If the hyperidrosis is not cured with the first course of treatment, the procedure must be repeated a second or third time if necessary.

If there is any debility present, it should be treated by iron,

quinine, strychnine, or the mineral acids. Anti-sweating remedies, as aromatic sulphuric acid, belladonna, or ergot, may be given. Of these belladonna or atropin is usually of most service, but often has no effect whatever, either in small or large doses. Pilocarpin, in small or large doses, has been recommended ; as also faradization. In spite of the use of any or all of the above remedies, many of the cases of local hyperidrosis will not even show the slightest improvement from treatment.

ANIDROSIS.

Definition.—A functional disorder of the sweat glands, characterized by diminution or cessation of the sweat secretion.

Symptoms.—Anidrosis is either idiopathic or symptomatic. There are many persons in whom during their whole life the sweat glands are very inactive under conditions which ordinarily produce visible sweat. Exposure to great heat or active physical exertion has little effect in these cases upon the amount of sweat secreted. These cases may be considered as cases of idiopathic anidrosis, and as constituting an independent functional disorder of the sweat glands. In them the skin is dry and hard to the touch ; the palms of the hands and the soles of the feet feel uncomfortably dry, and easily become cracked and fissured.

As a symptomatic condition, in connection with certain diseases of the skin, or disorders of the nervous system, or of the general nutrition of the body, anidrosis may be either local or general. A dry skin is present in cases of ichthyosis wherever the eruption is present ; but in places free of the scabs, as the palms of the hands and the soles of the feet, axilla, etc., it is absent. In chronic eczema, psoriasis, lichen ruber, the skin is dry where the eruption exists, and normal in other situations. Although it is maintained that there is diminished secretion in these cases at the seat of the eruption, the probability is that the amount is not diminished, and that the skin feels drier than normal on account of the pathological condition of the epidermis. More than the normal quantity of sweat secreted would be re-

quired to keep the excessively produced scabs present in those diseases as moist as the normal epidermis, hence the dry feel of the skin in these places is no proof that the sweat gland function is interfered with by the local nutrition disorder. Moreover, the secreting portion of the sweat glands is too deeply seated to be affected by any simple anomaly of growth of the epidermis, as is the case in lichen ruber and psoriasis.

In certain forms of paralysis, in the anæsthetic form of leprosy, in diabetes, in some neuralgias, anidrosis is present. In diabetes it is general, and in the other conditions it is local. In all, it lasts as long as the disease producing it.

In disorders affecting the general nutrition of the body, the so-called cachectic diseases, as carcinoma, tuberculosis, and in fevers, there is generally temporary anidrosis. From whatever cause it arises, the skin in this affection is dry and rough, with the subjective feeling of dryness, itching and tension.

Treatment.—If symptomatic, the producing disease or condition must be treated, and in addition, sweat-producing remedies, as water, hot baths and jaborandi, may be ordered, if there are no contra-indications. In the idiopathic form, baths, with friction to stimulate the glands, is all that can be done. If the skin becomes fissured, emollient applications should be employed.

BROMIDROSIS.

Syn.—Osmidrosis ; Stinking sweat.

Definition. — A functional disorder of the sweat glands, characterized by an offensive odor of the perspiration.

Symptoms.—The perspiration of every individual is more or less characteristic as shown by the ability of a dog to track the footsteps of his master. If the perspiration is offensive, the condition is called bromidrosis or osmidrosis. It is physiological in the colored race, and is most marked in warm weather when they sweat more than in winter. This universal bromidrosis is also met with in some white persons who bathe regularly, and are otherwise cleanly in their habits. In these cases the odor arises from the composition of the sweat secreted by the glands

and not upon chemical changes occurring after it has reached the free surface. They are cases of genuine bromidrosis. The stinking sweat may be secreted only from certain parts of the body, as the axilla, groin, genital region, feet ; situations where the sweat glands are well developed, and where the secretion does not so rapidly evaporate. In the majority of the cases, however, of localized "stinking sweat" the disagreeable odor arises from decomposition of sweat and sebaceous matters after they have reached the free surface. This is especially true of many of the cases of bromidrosis of the feet which could with propriety be regarded as examples of local hyperidrosis. Even in these cases, however, the secretion decomposes sooner than it should normally, and as the odor is the characteristic symptom, they may properly be classed under bromidrosis, unless ordinary cleanliness is sufficient to remove the odor. Bromidrosis of the feet is generally symmetrical, is met with in both sexes, is most common in middle age, but may exist from early childhood to old age. The symptoms on the feet have already been described under hyperidrosis. In both general and local hyperidrosis, the sweat secreted is usually, though not always, increased in amount.

Some diseases, as small-pox, typhus fever, etc., are accompanied with a more or less characteristic odor which has enabled physicians sometimes to diagnose the disease before examining the patient. These are not properly cases of bromidrosis, neither are those in which there is a peculiar odor present after the eating of some kinds of food, or the taking of certain medicines, as iodine, asafœtida, etc.

Etiology.—The local form depends on the decomposition of the fatty acids present in the sweat and sebaceous glands. The universal form is physiological in the negro race. Sex has no influence in its production. It is most frequent in middle life. The nervous system is sometimes at fault.

Diagnosis.—It is to be diagnosed from hyperidrosis. In the latter, the smell depends on the decomposition of the fatty acids retained in the clothes or on the skin, and is remedied by ordinary cleanliness.

Treatment.—If physiological, extra attention to cleanliness, and the use of a pleasant perfume on the skin or clothes is all that can be done. If the nervous system is at fault, it must be strengthened by appropriate tonics, good air, and proper food. The treatment for local bromidrosis consists in the means already described for local hyperidrosis of the feet.

CHROMIDROSIS.

Syn.—Colored sweat.

Definition.—An affection characterized by a change in the color of the sweat secretion.

Symptoms.—This is a very rare affection, but cases have been reported from time to time in which the sweat secretion has been of a yellowish, greenish, bluish, reddish, brownish or blackish color. Probably in many of these cases deception has been practiced upon the physician, as they have been met with chiefly in unmarried, nervous or hysterical females. Cases of genuine chromidrosis, however, have been reported by careful observers. It consists in the admixture of normal sweat with coloring matter. The sweat secretion is usually, but not always, increased in quantity. It is met with especially upon the face, chest, abdomen, arms, hands and feet. It is not constant in its presence, appearing and disappearing at irregular periods. It is more frequent in females than males, and among the former, more frequent in the unmarried. They have been generally in a nervous or debilitated condition and afflicted with some uterine disorder. The disease has been known to follow great excitement or shock to the nervous system. The color is supposed to generally depend upon the presence of Prussian blue or indican. Scherer, in one case, found the bluish color to depend upon protosulphate of iron. A bluish tinge has been observed in the sweat of persons employed in copper works.

Treatment.—The treatment is to be conducted on general principles. The system is to be brought to a normal physiological condition. The chlorosis, debility, hysteria, and uterine disorders require appropriate treatment. If the kind of employment is the cause, then it must be changed.

Uridrosis.—(Urinous sweat.) This consists in a union of urine elements, especially urea, with the sweat secretion. Normally the sweat contains a small amount of urea, but in this condition it is greatly increased. As the sweat glands can perform some of the functions of the kidneys, uridrosis is met with especially in disorders of these latter organs. It has been observed after the use of jaborandi, and in cases of cholera. The urea may be present in such quantity as to form a colorless or whitish crystalline deposit, like flour upon the skin.

Phosphoridrosis.—Phosphorescent sweat is rare, and has been observed after eating certain fish, in malaria, and in phthisis. In the dark the body appears luminous.

Black sweat, from the presence of blood which has passed into the sweat apparatus, is not properly a chromidrosis, but the result of a hæmorrhage, and consequently is noticed under class iv.

SUDAMINA.

Syn.—Miliaria Crystallina.

Definition.—A non-inflammatory affection of the sweat glands, characterized by the formation of pin-point to pin-head or larger, isolated, superficial, clear, dew-drop-like vesicles.

Symptoms.—Three forms of sudamina have been described: (1) *Sudamina rubra*, consisting of pin-point to pin-head or larger red papules, or vesicles with a reddish base caused by excessive sweating. (2) *Sudamina alba*, an eruption in which the epidermis forming the vesicle is macerated and the vesicular contents of a milky color. (3) *Sudamina crystallina*, in which there are no signs of inflammation and the vesicle contents are clear. The first two forms belong to the inflammatory affections. In this place we have to deal only with the third form which alone deserves the name of sudamina.

Sudamina occurs in connection with febrile diseases, as puerperal fever, pneumonia, typhoid, scarlatina, rheumatism, variola; in disease leading to cachectic conditions, as tuberculous, phthisis, carcinoma, pyæmia, chronic diarrhœa and pleurisy in children, etc. Active muscular exercise in fat or

feeble persons, the application of hot cloths to the skin under febrile conditions, too much clothing, leading to profuse sweating, and vapor baths especially in warm weather often cause sudamina.

As an example of the combined action of exercise and vapor baths, we have the formation of sudamina on the face of washer-women, which will be described further on. Any thing that causes an excessive secretion of sweat is a cause of sudamina.

Sudamina appears especially on the face, chest, abdomen, axilla and groin, but may occur on the extremities. In puerperal fever it occurs on the neck, breast, abdomen and thighs ; in typhoid fever, on the body and extremities ; in scarlatina, upon the body especially ; in pneumonia, on the chest ; in rheumatism and the cachectic conditions, on the neck, chest and abdomen. It is most liable to occur where the epidermis is thin, but may occur where it is thick, as on the palms of the hands.

The eruption appears as isolated, pin-point to pin head or larger, elevated, tense, clear, pearly-like vesicles, which have been properly compared to dew-drops. They form quickly, remain almost invariably isolated, although crowded together, and disappear by evaporation of the contents, and desquamation of the epidermic covering. Their course is variable ; fresh vesicles may continue to form, and the eruption consequently be prolonged for a considerable time. The more superficially seated, the more rapidly will the contents evaporate ; hence, vesicles on the face last much longer than those on the body. On the latter situation they may disappear in one, two or three days ; in the former they may last two or three weeks. They are never reddish in color or surrounded by a red areola. Sudamina of the face appears especially in women from 35 or 40 to 50 years of age or more ; the vesicles are roundish or acuminated, and appear more deeply seated than sudamina vesicles on the body. They form rapidly after active exercise as washing, in persons who sweat considerably in the face ; they are situated upon the nose, forehead or cheeks ; are isolated and disappear very slowly, without becoming opaque, or leaving evidence of their presence. Sudamina of the palms of the hands occurs in sum-

mer from excessive sweating caused by the high temperature, but it occurs also as the result of debility of the nervous system. I have observed sudamina arise in children a few hours before death, in whom there was no febrile affection.

Anatomy.—The vesicles in sudamina are caused by the collection of sweat in some portion of the epidermis or sweat duct. The contents are neutral or acid and without odor. Under the microscope they are seen to consist of clear

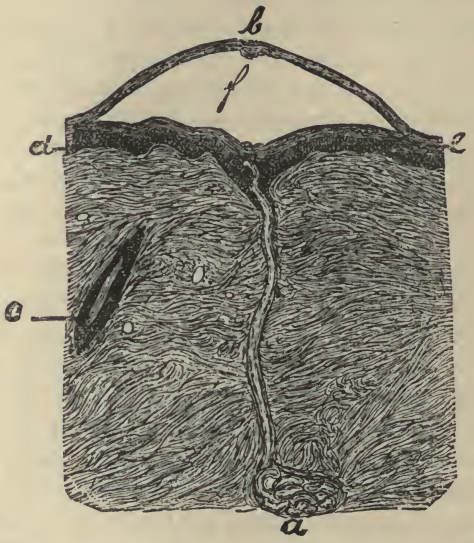


FIG. 23.—Vesicle of sudamina crystallina. *a*, sweat gland ; *b*, roof of vesicle, formed of corneous lamellæ, and showing at *b* the orifice of the sweat duct ; *c*, hair follicle, cut obliquely ; *d*, rete ; *e*, corneous layer ; *f*, vesicle.

sweat. The statement of Cornil and Ranvier that the vesicles contain a large number of lymphoid corpuscles is not correct. In those cases where, as on the body, the vesicles appear as elevated, dew-drop-like collections of water, the vesicle is situated between the lamellæ of the corneous layer. The walls of the vesicle are formed entirely by the corneous layer ; the roof consisting usually of more than half of the thickness of this layer ; that is, the liquid lies between

the laminæ of the deeper part of the corneous layer. In this form, then, the vesicle is not caused by a distension of the sweat duct, but by its obstruction, which prevents the sweat reaching the surface ; and causes it to rupture the wall and collect between the lamellæ. As the union between the cells composing a single lamella is greater than that between contiguous lamellæ, the sweat passing in the direction of least resistance will collect between the lamellæ instead of reaching the free surface. That the vesicle contents come from a sweat gland, and not from the papillary bloodvessels, is proven by the

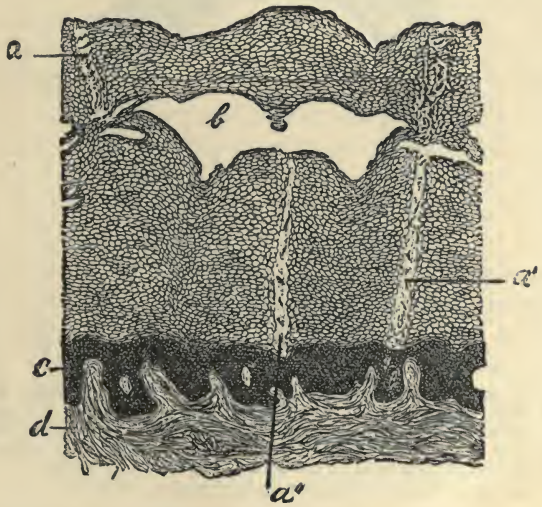


FIG. 24.—Section of a sudamina vesicle of the palm of the hand. *a*, sweat duct ; *a'*, sweat duct ; *a''*, sweat duct ; *b*, sudamina vesicle ; *c*, rete ; *d*, corium.

chemical character of the contents, and the invariable presence of a sweat duct at its base, as shown in fig. 23.

In fig. 23 is represented the manner in which the corneous layer is separated and the walls of the vesicle formed.

In the palm of the hand, where the corneous layer is thicker, elevated vesicles do not form so readily, but the situation of the sweat collection is the same. In the case from which figure

24 was taken there was a peculiar tingling, burning feeling in the hands, and the case some ways resembled those described by Dr. Tilbury Fox as cases of dysidrosis. There was marked sweating of the hands and a general nervous condition, but the vesicles showed no tendency to group. In this case the sweat ducts were ruptured in places, and vesicles of all sizes were numerous when the sections were examined by the microscope; but in every case they arose from retained sweat and not from

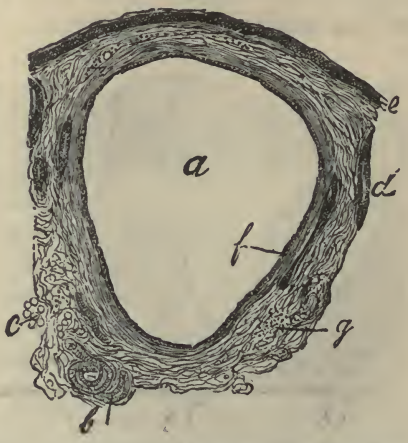


FIG. 25.—Section of a sudamina vesicle from the forehead. *a*, vesicle; *b*, sweat gland; *c*, fat tissue; *d*, hair follicles cut obliquely; *e*, epidermis; *f*, lining epithelial cells of duct; *g*, cell emigration. [At *g* and *c*, and between the upper part of the vesicle and the epidermis, there is a round cell collection, the result of changes produced by pressure by the vesicle contents.

transuded serum. Neighboring vesicles also sometimes coalesced.

In connection with *a* and *a'* small collections of sweat are seen between the corneous cells. The vesicle *b* comes from the sweat duct *a''*. It is to be noted that not a single lymphoid corpuscle, or round cell, is to be seen within the vesicles.

In those peculiar cases of sudamina of the nose, forehead and cheeks of females especially, it has already been mentioned that the vesicles appear to be deeply seated and have a longer existence than sudamina vesicles of the body. In fig. 25

is represented a section of one of such vesicles. Here the obstruction takes place, not in the corneous layer or in the rete, but in the corium, and consists of a dilatation of the sweat duct, and not in an escape of sweat into the neighboring tissue, as in the two former instances. The deep seat and mode of origin of the vesicle will explain its chemical characters. The duct becomes enormously dilated, but still lined with epithelium which has become flattened out, and the contents consist, not of sweat and inflammatory products, but of sweat alone. Thus in all three cases sweat, as sweat, does not irritate the skin and produce inflammation, and the contents of pure sudamina vesicles do not become purulent.

Etiology.—The excessive sweating is caused in a few cases by the increased activity of the glands from the elevated temperature. In these cases the skin is very dry, and, as a consequence, the corneous cells contract and narrow the duct of the sweat gland, thus causing an obstruction to the excessively formed sweat. The cause of the formation of the vesicle within the corium I am unable to explain.

The conditions of the system favoring the development of sudamina have been described under the head of symptoms.

Diagnosis.—The eruption might be mistaken for miliaria or varicella. In miliaria the vesicles are of the same size as those of sudamina, but they are reddish in aspect, whilst sudamina is non-inflammatory. In varicella the vesicles are larger, some are multilocular, they commence on the head and subsequently appear over the whole body, and are inflammatory in character.

Prognosis.—The prognosis depends upon the cause.

Treatment.—Idiopathic sudamina is to be treated by dusting powders, as starch, lycopodium, etc., and washing the skin with alcohol. Symptomatic sudamina may be treated in the same way. If the eruption depends upon sweating caused by excessive muscular exercise, or vapor baths, these are to be avoided. In cases associated with debility, anti-sudoriferous remedies are indicated.

CLASS II.

HYPERÆMIÆ—HYPERÆMIAS.

In the class of hyperæmias are included those conditions in which there is an excess of blood in the vessels of a particular part. Conditions characterized by general hyperæmia (plethora), in which there is an increase in the total quantity of blood in the system, are not included in this class. An increase in the quantity of blood in a part may result from an abnormal amount of blood being admitted to the part by the arteries, in which case the blood pressure will be higher and the current more rapid ; or there may be interference with its removal from the part by the veins, when the current will be abnormally slow ; hence, hyperæmia may be either active or passive. This division in dermatology is somewhat arbitrary, and is made after the prominent clinical symptoms. The two forms may have the same cause, and they may be both present at the same time, as in the case of collateral hyperæmia, where there is stasis at the centre and fluxion at the periphery ; or an active hyperæmia may subsequently become a passive one, from increasing atony of the walls of the bloodvessels, the result of the long-continued distension. The terms atonic and arterial hyperæmia and fluxion are synonymous with the terms active hyperæmia ; and venous hyperæmia, or stasis with passive hyperæmia.

Cutaneous hyperæmia consists in an abnormal amount of blood in the vessels of the corium, and occasionally in the subcutaneous tissue also, the extent of area affected depending upon the cause of the hyperæmia ; and the appearance presented, upon the quantity of arterial or venous blood present. In active hyperæmia, there is more blood in the part, the current moves more rapidly, less oxygen is given

off to the tissues on account of this rapidity of circulation, and from these factors the skin is redder in color, and warmer than normal. In passive hyperæmia, there is more blood in the part, the current moves slower, consequently more oxygen is given off to the tissues than normally occurs, and the skin, from these factors, is darker in color and colder than normal.

The color of the skin in hyperæmia varies from a pale to a bright red, or dark-bluish red or cyanotic, the color disappearing or paling upon pressure. The patches are either diffuse or patchy, or crossed by dilated bloodvessels; they are on a level with the surrounding skin, or slightly elevated. The temperature of the part is normal, elevated or lowered. In size the patches of eruption vary from a lentil to finger-nail, when it is called roseola; or they are larger, more diffuse and irregular in shape—erythema. They feel either smooth and normal, or firm, and are frequently accompanied by a sensation of burning or itching. The rash arises rapidly, has an acute or chronic course, lasting a few hours, or days or weeks, and disappears, with or without pigmentation or desquamation. If it is long continued, the skin may become œdematous or hypertrophied, as the pressure overcomes the elasticity of the vessels and they become dilated, changed, and allow exudation to occur.

Active hyperæmia is either idiopathic or symptomatic. Idiopathic hyperæmia arises from direct irritation or injury to the part, acting directly by paralysis of the constrictors, or indirectly by reflex action. The influences which cause this condition are either of a traumatic, caloric, or chemical nature, hence the division of idiopathic hyperæmia into *erythema traumaticum*, *caloricum*, and *venenatum*.

Erythema traumaticum.—The hyperæmia of the skin resulting from mechanical action, as pressure from tightly fitting clothes, corsets, suspenders, bandages; from sitting or lying on firm substances, as leaning the elbow upon a table; and the irritation from scratching and rubbing, belong to this category. The eruption is usually of short duration, disappearing without scaling; but if long continued, it can change to a dermatitis or a passive hyperæmia.

Erythema caloricum.—This arises from the action of high or low temperature of the air, light, and water upon the skin. If the action is intense, it produces swelling of the skin, and more or less exudation. The hyperæmia from the action of the sun (erythema solare) appears only on the uncovered parts of the body, and usually runs a rapid course. Very hot or very cold baths frequently produce a temporary erythema. From whatever cause, the hyperæmia is characterized by an eruption of a bright red color, which later becomes of a darker brown ; the skin is frequently pigmented, and there is slight desquamation.

Erythema venenatum.—Hyperæmia resulting from the action of irritating chemical substances, the so-called rubefacients, as turpentine, croton oil, pepper, various coloring substances, is either temporary or long continued, depending upon the irritating quality of the substance, and the duration of the application. If the action is long continued, it leads to inflammation of the part.

Symptomatic active hyperæmia—erythema symptomatica.—This form of hyperæmia acts directly upon the bloodvessels, or indirectly by reflex action from the central nervous system. It frequently accompanies or follows febrile or non-febrile conditions of the general system or of a special system, especially that of the nervous. Hyperæmia frequently precedes or accompanies general diseases, as variola, cholera, typhoid fever, vaccina ; the changed condition of the blood causing a reflex erythema. Roseola cholerica appears in the asthenic, or reconvalescent stage ; and roseola infantilis appears as a diffuse or circumscribed redness, disappearing upon pressure, and accompanying febrile conditions, or an abnormal state of the intestinal tract.

Symptomatic hyperæmia usually disappears without desquamation, and there are no subjective symptoms ; but if the hyperæmia recurs frequently, the bloodvessels become dilated, œdema occurs, the gland secretion of the part may be increased, and the tissue hypertrophied.

Passive hyperæmia.—In this form the circulation is slower than normal, more oxygen is given off to the surrounding tis-

sues, consequently the skin is darker in color, varying from a dark bluish red to black, which disappears upon pressure; the temperature of the part is normal or lowered; there is some swelling, and occasionally œdema and itching, and a feeling of tension and creeping. The course is chronic, and may lead to inflammation or even gangrene. Passive hyperæmia may result from changes in the heart or in the bloodvessels, causing a diminution in the blood pressure, or an increased resistance to the flow through the vessels. If the return of the blood from a part is prevented by bandages, tight garters, tumors on the extremities or in the abdominal cavity, etc., passive hyperæmia will result. Varicose veins, low temperature and damp air, sudden cooling of the body, removal of support of the vessels, and diminution in the blood pressure, as occurs after tapping for ascites, are all causes of stasis. In collateral hyperæmia, after closure of a main vessel by a thrombus or embolus, there is first an active and later a passive hyperæmia. Diminution in the tonicity of the vessels from deficient innervation; disease of the bloodvessel walls; interrupted return of blood, as in varicose veins after long standing, or walking or lying; weak heart after disease, fatty degeneration or valvular lesions, are so many causes of stasis. Long continued active hyperæmia, resulting from traumatic, caloric or chemical influences, results in becoming passive. If the cause of a passive hyperæmia is in disease of the heart and not in the bloodvessels, the stasis will be general—cyanosis; but if from hinderance to the circulation at the periphery, the extent of the stasis will depend upon the situation of the obstruction; the nearer the periphery the smaller will be the area affected (livedo).

Treatment.—The treatment for both active and passive hyperæmia consists in the treatment of the cause. To alleviate any itching or burning that may be present, washing with alcohol or weak alkaline solutions (soda or borax), and dusting the surface with starch, flour or lycopodium, is all that can be accomplished. If the hyperæmia has passed to a dermatitis, then antiphlogistic remedies, to be described later on when treating of this subject, must be employed.

CLASS III.

EXUDATIONES—EXUDATIONS.

In this class are included the acute, contagious, inflammatory diseases. As the exanthemata properly belong to general medicine and not to dermatology, except in so far as it is necessary for the dermatologist to be thoroughly acquainted with the characters of the eruption present in the different diseases on account of diagnosis; so in treating of these subjects I will confine myself to a description of the symptoms and diagnosis.

I have placed impetigo contagiosa in this class on theoretical grounds, because, if it exists under the conditions described by those who have written upon the subject, it must belong to the acute, contagious, inflammatory diseases.

MORBILLI.

Syn.—Measles; Rubeola.

Definition.—Morbilli is an acute, contagious, febrile affection, characterized by a catarrhal inflammation of the mucous membrane of the respiratory tract, and a papular rash over the surface of the body.

Symptoms.—The period of incubation is from 12 to 14 days. The stage of invasion lasts on an average about three days, and presents the symptoms of a mild catarrh of the conjunctiva and respiratory tract. There is at times a distinctly croupy cough, or perhaps a well marked attack of catarrhal or false croup may usher in the disease. The physical signs will be a quickening of respiration, and at first sibilant and sonorous râles; a little later large mucous râles may be heard. The eyes present at the same time an injected and watery appearance, with aversion to light. There is frequent sneezing, due to marked coryza,

and dull pain or a heavy sensation in the frontal sinuses. The mucous membrane of the throat also shows an increased vascularity without much swelling. There is more or less headache, uneasiness at the epigastrium and constriction of the chest, due to the bronchitis. A few hours after the beginning of the symptoms a fever develops, which may rise as high as 102° or 103°, with a corresponding rapidity of the pulse. The fever occurring during the period of invasion of measles is remittent, the lower temperature being in the early part of the day and the exacerbation in the evening. Vomiting *may* take place at any time before the eruption, but is not so characteristic as in scarlatina. The stage of eruption may be delayed by exposure to cold, or from internal complication (as a pneumonia) preventing the determination of blood to the surface. The rash first appears on the face and neck, and extends downward (in rather orderly progression), covering the trunk and extremities in from a day to a day and a half. It appears as small, red, flat papules (very slightly elevated), which gradually increase in size and become surrounded by little hyperæmic circles. The papules are apt to unite and form little patches (of a mulberry color) that sometimes take on a crescentic form, with clear skin between. Although these patches are generally discrete, in plethoric subjects with a high fever, several of them may coalesce and thus form a confluent rash. This is especially apt to take place on the cheeks, back and nates. Where the hyperæmia is intense, there may occur capillary hæmorrhages on the surface of papules, but they do not indicate a malignant or dangerous form, and are not true "hæmorrhagic measles" lesions. When the rash first appears there is an increase in the local and general symptoms. The face is slightly swollen, the conjunctiva much injected and the cough more frequent, although there may be little expectoration. The fever is also as high, as, during the exacerbation of the remittent stage, it increases with the efflorescence of the eruption, so that the maximal temperature corresponds with the maximum of the exanthem. The symptoms begin to decrease by the second day of the rash, which generally disappears by the fourth to sixth day. The fever, in uncompli-

cated cases, then ceases, and all that remains is a slight staining of the skin and a cough that continues for some days. When the eruption disappears the stage of desquamation begins. It is not so marked as in scarlatina, and sometimes it is so slight as hardly to be observed. The exfoliation is furfuraceous and is most marked where the rash has been thickest.

Occasionally an irregular form of measles has been noted. Thus there may be no catarrhal inflammation of the respiratory tract, and sometimes, though rarely, there is an entire absence of the eruption. The latter condition may be caused by some deep-seated internal inflammation which prevents the rash by withdrawing the blood from the surface, or there may not be sufficient blood-poisoning to cause changes in the skin. There is a form of the disease called rubeola nigra, from the dark or livid appearance of the eruption, which lasts a longer period of time and does not fade on pressure. Petechiæ, or extensive diffuse hæmorrhages, may occur both in the skin and from mucous membranes. This, the true hæmorrhagic measles, is very fatal. It is due to the malignant nature of the poison, and is often accompanied by some internal inflammation, as pneumonia.

The most usual complications of measles are severe bronchitis and broncho-pneumonia. The smaller bronchial tubes may be involved, producing a capillary bronchitis. If this happen early in the disease, the eruption may be delayed; or if it occur after the development of the rash, it may cause its retrocession. When pneumonia occurs, it results from the extension downward of the inflammation, and hence is of the catarrhal variety, with an exceedingly grave prognosis.

Entero-colitis not infrequently forms a serious complication of measles. The brunt of the imflammation may be expended upon the colon, producing mucous and bloody stools. In other cases there may be a severe "non-inflammatory" diarrhœa. Sometimes, in institutions, gangrene of the mouth or vulva may develop in poorly nourished children as a sequel of measles.

Diagnosis.—Before the appearance of the eruption the diagnosis from simple coryza or tracheo-bronchitis may be suspected by the character of the fever, which is generally higher

than that caused by a mild catarrhal inflammation, (and from the fact that it is not relieved by treatment). The characteristic watery appearance of the eyes will assist in the diagnosis.

The diagnostic characteristics of measles are the sudden onset of catarrhal symptoms, with considerable fever, lasting generally 72 hours (the period of invasion thus being longer than in the other febrile exanthems), followed by a mulberry-colored, broadly papular rash, appearing first on the face, chin, etc., and gradually extending over the trunk and extremities in orderly extension without the development of either vesicles or acuminated papules, the fever not subsiding on the appearance of the rash, but rather increasing. These features, with the absence of the peculiarities of the other exanthems will furnish a diagnosis. The differential diagnosis of measles, and the initial or true rash of variola and of varicella are given under their respective headings. For the diagnosis from scarlatina and from rœtheln, see page 98.

RŒTHELN.

Syn.—Rubeola ; German measles.

Definition.—Rœtheln is a mild, feebly contagious disease, attended by slight febrile movement and a roseolous rash.

Symptoms.—The period of incubation varies, but is probably on an average about two weeks. The disease is sometimes ushered in by feelings of slight malaise, and occasionally by some nausea and vomiting. In a few hours, or sometimes a day, the rash begins upon the face and scalp, and extends downward upon the trunk and extremities. It commences as many closely-set rosy points, very slightly elevated, generally arranged in small circular areas, with clear skin between. The spots vary in size from pin heads to two-fifths of an inch in diameter—the size of a lentil. In general appearance the eruption bears more resemblance to measles than to scarlatina. It usually covers at least one half of the surface of the body and is sometimes accompanied by much itching. There is rarely any desquamation of the epidermis, and the eruption completely disappears

by about the fourth day. Accompanying the rash there is a mild inflammation of the conjunctiva, with lachrymation and some coryza. There is also slight injection of the fauces and swelling of lymphatic glands of the neck. The larynx, trachea and the bronchial tubes do not appear to become involved in the inflammation, or if so, very slightly. The temperature is not high, rarely beyond 100°, and the whole duration of the disease does not generally exceed five days. There is not any, or, at most, only a very slight prodromal catarrhal stage in rœtheln, and the little, if any, fever which occurs does not increase to a maximum to correspond with the maximum of the eruption, as in measles. In measles the prodromal stage is about 72 hours. The spots in rœtheln are rounder and more regular in form, are more discrete, and also paler and more rosy in color. In rœtheln the eruption may be fading from the face and appearing on the legs, while in measles the eruption on the face increases until the rash is fully out all over the body, and then the whole rash begins to disappear. The duration of rœtheln is shorter and the course milder. In scarlatina the outset of the fever is severer, and is attended by the characteristic initial vomiting and the especially rapid pulse. The attendant pharyngitis will probably be severer and parenchymatous, the anterior surface of the soft palate appearing pale by comparison with the intense injection of the rest of the fauces. The tongue may have the characteristic vivid red papillæ on a white ground at first, and soon become red and glazed from shedding of its epithelium.

The rash appears first in scarlatina on the neck and breast, is comparatively scanty on the face, and when present leaves a relative pallor around the mouth and on the region of the chin and nose. In rœtheln the rash is abundant in the face. The scarlatinal rash spreads more rapidly over the body, is more like a diffuse erythema, though it can be seen to be made up of innumerable fine, distinct points, and when the blotches are more discrete, the size of the separate punctæ are not as large as the rosy spots of rœtheln. The sequelæ of scarlatina, nephritis, synovitis, etc., would later on confirm the diagnosis.

SCARLATINA.

Syn.—Scarlet fever; Scarlet Rash; Febris Anginosa.

Definition.—Scarlatina is an acute, contagious, febrile disease, attended by a more or less severe inflammation of the throat, and the development of a scarlet rash over the whole or part of the body.

Symptoms.—The period of incubation varies from one to seven days, although the disease may sometimes begin as early as a few hours after exposure. The symptoms usually begin abruptly, without a prodromal stage like measles. Frequently there is a distinct rigor, but sometimes only a feeling of chilliness through the body is experienced. (In children a convulsion may occur instead of a chill.) Following this there is a quick rise of temperature, which generally reaches as high a point at this time as at any period in the disease. The fever reaches usually 103° or 104°, and in bad cases as high as 106° or 107°, with the pulse more frequent than in other fevers of the same temperature. The occurrence of vomiting at this time is an important and characteristic symptom, and is probably due to the irritating effect of the scarlatinous poison upon the medulla. If there is simple nausea, there will probably be a mild grade of fever, while if the irritation of the stomach is extreme and persistent, a severe form of the disease will probably follow. One of the earliest symptoms is a reddening of the mucous membrane of the mouth and throat. The tongue is at first covered with fur and has a reddening of the tip and edges with the papillæ enlarged and elevated, giving the familiar strawberry appearance. Swallowing is difficult and painful, and the follicles of the tonsil are frequently plugged by a slight fibrinous exudation. The inflammation often spreads up to the mucous membrane of the nose, giving rise to an irritating muco-purulent discharge. Although there is not so much tendency for the morbid process to extend downward into the trachea and bronchial tubes, yet there may be a slight cough from the collection of mucus in the back of the throat, or, rarely, from mild bronchitis.

The rash appears from six hours to a day following the initial symptoms. It first appears about the neck and chest and flexures of the joints, where the surface is apt to be warmest. At the beginning there may be only indistinct patches here and there, but these soon coalesce and extend, until in a few hours the trunk and extremities are covered by a diffuse and continuous erythema. The character of the rash may differ somewhat in different cases. Thus it frequently presents a smooth, boiled-lobster appearance; or it may consist of minute, distinct, punctate points very closely set and separated from one another by small and paler areas of skin. These points are due to engorgement of the cutaneous papillæ, and when they occur about a hair follicle impart rather a rough sensation to the finger. The reddening disappears on pressure but quickly returns when the circulation is good; if on the other hand it is slow on returning it shows a feeble circulation and a serious form of the disease. In cases where the dermatitis is severe, small whitish vesicles may make their appearance either in patches or almost over the entire surface of the body. Occasionally vesicles may appear larger, as in herpes or varicella, as the result of sweating during defervescence, or as complications and sequelæ. In rare cases, on account of the intensity of the exanthem, minute violet hæmorrhagic points may appear on the skin without very serious import. Also exudations of blood may take place into the superficial layers of the skin in larger points, or in broad patches, or even into the subcutaneous cellular tissue, indicating a severe blood poisoning and an unfavorable prognosis. The throat affection, fever and prostration continue with unabated severity for from four to six days, when the symptoms become less urgent and a gradual decline of the disease begins. Convalescence is generally well established by the beginning of the second week. The inflammation of the buccal and faucial mucous membrane becomes greatly lessened, and the tongue resumes more its natural appearance. The rash is much less distinct and soon fades away altogether. Following this there is a desquamation of the epidermis over the body, usually beginning on the face and neck. On the palms of the hands or

any place where the epidermis is thickened it may be detached *en masse* forming a sort of cast of the part ; in other places where the skin is thin, there is a furfuraceous desquamation. The exfoliation of the epidermis occupies from several days to several weeks and is usually accompanied by a general improvement in the condition of the patient.

There is no disease that presents such varying degrees of severity as scarlatina. Thus there is an exceedingly mild form of the disease in which there is little fever and acceleration of pulse. The pharyngitis is slight, and the rash instead of being continuous over the whole body appears in different patches and has not the deep scarlet hue so often seen in this disease (Scarlatina Variegata). The patient does not appear or feel very sick, and the mild symptoms begin to disappear in from two to four days. In cases of this kind it is often difficult or impossible to make a positive diagnosis, but they should be watched with great care, as not infrequently there follows a severe or fatal nephritis.

Another form of the disease is known as scarlatina anginosa, which is marked by unusually severe inflammation of the mucous membrane of the throat and tonsils. There is much swelling from sub-mucous infiltration and extensive inflammation of the lymphatic glands and connective tissue of the neck. This affection produces an increase in the severity of the fever and constitutional symptoms, which continue after the rash has subsided. The inflammation may disappear after one or two weeks by resolution, or go on to suppuration and the formation of abscesses.

In certain epidemics scarlatina takes on a malignant form. The invasion is severe with a very high temperature and quick pulse. The eruption assumes a dusky color and slowly returns after pressure, showing feebleness of the capillary circulation. The cerebro-spinal system is early and markedly affected by the poison. An intense headache may be one of the first symptoms of the malignant form, quickly followed by delirium ; or convulsions may occur early. In some cases the patient will become rapidly comatose and remain in that condi-

tion until death ; the nervous system being overcome by the virus at the very commencement of the disease, the period in which it is usually most active. There is a condition of great restlessness in those cases in which the nervous system is not so quickly overpowered.

Scarlatina may at times take on an irregular form due to the existence of some other disease or to a disordered condition of the system. Thus it is reported that an enteritis has postponed the appearance of the rash for almost a week after the initial symptoms had appeared. In any case in which there is acute or chronic disease of any of the viscera, with a consequent congestion of the parts, the eruption may be slow in developing, or not appear at all. In rare cases the disease may pursue an irregular course in a person apparently in perfect health and without any known cause. The occurrence of diphtheria may be observed early in the disease, or not until the fever is beginning to abate.

A thick false membrane forms upon the mucous membrane, usually of the tonsils, penetrating into its substance. The pseudo-membrane may spread from the fauces up to the nares. It not infrequently happens that inflammation of the synovial membrane of certain joints occurs with scarlatina. The redness and swelling are so slight as often to be overlooked, especially as the pain is of a very mild grade. The wrist joint is frequently affected. Pleuritis and pericarditis occasionally occur during the period of desquamation and cause a very uncertain prognosis. A most frequent complication or sequel of scarlatina is nephritis. A slight albuminuria due to congestion of the kidneys is of common occurrence during the existence of the fever, but actual inflammation of these organs usually takes place after the second week, when the rash has disappeared, although it sometimes happens before. The urine is diminished, contains albumen and casts, and soon all the typical symptoms of uræmia may manifest themselves. At times in the declining period of the fever or during convalescence, the inflammation in the throat may spread up the Eustachian tube to the middle ear, causing a severe otitis media. Pus col-

lects in the cavity of the tympanum, and after several days pressure ruptures the drum-head and escapes through the external meatus. If the aperture in the drum closes by granulation hearing will not be impaired, but if this do not occur, or if there be caries of the surrounding bone, with destruction of the ossicles, hearing will be lost.

The differential diagnosis of scarlatina from variola, varicella, and rœtheln has been given in the chapters devoted to those subjects. In the early stages of the eruption, scarlatina may be mistaken for measles, but they differ in the following respects: In scarlatina the prodromal period is very brief, beginning rather suddenly with high fever, which speedily may reach 104° or more. Vomiting is much more frequent at the outset, and also convulsions in children; the pulse more rapid, and in severe cases the nervous system more profoundly affected. In about twelve hours appears the rash on the skin and the redness of the fauces. In measles there is a prodromal period of about seventy-two hours, marked by catarrhal symptoms of conjunctivæ and respiratory tract, the fever being of only moderate severity. The fever in both cases continues or increases after the eruption appears. The redness of the throat in measles is diffused without sharp limits over the mucous membrane of the mouth, palate, and pharynx, and may be spotted, and the swelling is only moderate. In scarlatina the anterior surface of the soft palate is comparatively free, the pharyngitis being limited at the free margin, and in most cases accompanied with greater swelling and deeper seated inflammation. The tongue also will assume the "strawberry" appearance. In measles the eruption appears first on the face as a rule, and is there especially abundant on the cheeks and chin, while in scarlatina the rash is more likely to appear first on the neck and breast, and to leave the face relatively free. Even when present on the face there is a characteristic pallor about the mouth.

The eruption in scarlatina spreads more rapidly, often covering the most of the body in twenty-four hours, when extensive; while in measles it is slower and more orderly in its progress in normal cases, requiring two days or more for its full develop-

ment, and the rash first appearing on the face increases in severity till the full development on the legs, etc.

The individual spots in measles rapidly become more papular and broader, coalescing into irregular blotches of crescentic shape, with indented margins, with decidedly clear patches of skin between, unless in very confluent cases. In scarlatina, however extensive and uniform the exanthem, it can nearly always be seen to be made up of innumerable fine points, with minute white lines or circles about them, and, when the congestion is marked about the hair follicles, gives a roughened feeling to the touch.

The desquamation in measles is furfuraceous, in scarlatina in scales and flakes.

In cases where the diagnosis is doubtful from the scantiness of the eruption, the sequelæ will afford indications for diagnosis, being, after measles, bronchitis, and catarrhal pneumonia; after scarlatina, necrotic or diphtheritic pharyngitis, nephritis and inflammations of synovial and serous membranes.

In the beginning of certain febrile diseases, as for instance, acute pneumonia, a very general erythema may appear on the skin of plethoric children, particularly on the trunk, which for a few hours can scarcely be distinguished from the eruption of scarlatina, but generally the lips and face are very red at the same time, and the blush of the skin will not be made up of fine punctæ; moreover, the flexures of the joints may be relatively unaffected. In such a case, twelve to twenty-four hours would suffice to develop the peculiar pharyngitis and tongue in the one case, or in the other the rash will disappear with the advent of symptoms peculiar to that disease.

In the roseolas and erythema arising from gastric disorders, etc., the individual spots are larger, more rosy, and coalesce into irregular blotches, and are distributed in masses and patches irregularly over the trunk, etc. They are fugacious, coming and going without the orderly evolution and distribution seen in the specific exanthem. They are also without prodromal symptoms and those arising from the localization of the poison in the pharynx, etc.

VARIOLA.

Syn.—Small-pox ; pocken ; Blattern ; variole.

Definition.—Variola is a specific, contagious, febrile affection, running a definite course and characterized by a papular, vesicular and pustular eruption on the skin.

The incubative period, when the infection is received through the air, is from twelve to fourteen days ; if inoculation has been practiced, it is from eight to eleven days.

Symptoms.—A statement of the principal symptoms will be given as an indispensable aid to the correct diagnosis of the skin lesion.

Stage of Invasion.—The disease begins abruptly with either repeated chills or a severe rigor marked by a severity peculiar to variola. Following upon this is the primary fever which is apt to run high, sometimes reaching 104° or 105°. The tongue is coated, and gastric irritation, shown by nausea and vomiting, may be a very prominent feature at this time. There is usually a marked frontal headache, and in some cases delirium more or less violent, and muscular tremors, with an aching feeling in the limbs and intense lumbar pain. When unusual severity of these preliminary symptoms is present, the confluent variety of the eruption may generally be predicted. There may occur during this stage a general erythema of the skin, not unlike scarlatina, or the redness may be in isolated patches, looking more like measles (erythema variolosa), but the patches never become papular. These prodromal rashes appear most frequently on the second day, and last usually twelve or twenty-four hours, though the duration may be much prolonged. There is also occasionally noticed in benign cases a greater or less number of minute petechiæ upon the surface both of the trunk and extremities, especially on the lower part of the abdomen or the inside of the thighs, which leave brownish-green stains. The period of invasion generally lasts from forty-eight hours to three days. In this initial stage is also observed the fatal condition known as true hæmorrhagic small-pox,

variola nigra, purpura variolosa. About the second day of the fever, which is not very high, appears a general, intense scarlatinaform, seldom measley rash, on the trunk and extremities, leaving the face nearly always exempt. The redness disappears on pressure, but in this erythema petechiæ and more diffuse cutaneous hæmorrhages soon appear, varying in size from a pinhead to an inch in diameter. They are generally discrete on the extremities, but confluent on the breast and abdomen. The conjunctivæ are bloodshot, and large, dark rings are formed about the eyes by hæmorrhage into the orbital cellular tissue. Hæmorrhage also takes place from the various mucous membranes, causing bloody stools and vomit, with some præcordial pain and metrorrhagia. Albumen in considerable quantity generally precedes a hæmaturia. These symptoms are accompanied by a feeble pulse and great prostration, but the intellect generally remains clear. This variety of small-pox is uniformly fatal, and it is exceptional for a patient to survive the sixth day.

Local hæmorrhages sometimes occur later on into the formed pock or even papule, but this condition, although probably of the same nature, is somewhat distinct from the one above described ; it is very much less fatal.

Stage of eruption.—The rash usually begins on the third day, when there is a marked remission in the primary fever in mild cases and in varioloid ; twelve to eighteen hours later in severe cases, which may reach almost complete apyrexia. The eruption commences as minute red spots, appearing first on the face about the lips and chin, and sometimes almost simultaneously on the neck and wrists. It then covers the rest of the face and scalp, and gradually extends over the chest, arms, abdomen and legs, occupying from one to three days in its diffusion over the whole surface. In young children, the rash sometimes first appears in the folds of the skin about the genitals. The centre of each macule soon becomes indurated and raised, until a small, round, hard papule is formed, which is tender and feels like shot under the finger. In about twenty-four hours after the first appearance of the eruption, some clear liquid begins

to collect in the top of the papules, which are thus converted into vesicles. The vesicles attain their full size about the fifth day of the eruption. They are umbilicated, with a circular, indurated base and a surrounding area of redness and tenderness. Not only the skin, but some of the mucous membranes, are at the same time affected by the eruption. The lining membrane of the mouth and throat is most frequently involved, although the larynx, trachea and bronchi, and even the conjunctiva, may be attacked. The eruption on the mucous membranes presents an altered appearance, as the absence of the horny layer of the skin prevents the formation of typical vesicles and pustules, but in their place are seen little erosions and ulcerations. About the fifth day of the eruption the contents of the vesicles begin to grow turbid, the reticulated structure is lost, and the umbilication disappears.

Stage of suppuration.—This begins about the fifth day of the eruption and is accompanied by the development of a well-marked secondary fever. The temperature is generally higher in the evening, and is accompanied by a quick pulse and dryness of the skin. Redness and œdema is more or less marked between the pustules. The swelling is often extensive in the face and eyelids, and is accompanied by a burning sensation. At times the contents of the distended pustules may rupture from friction of the clothing, and add to the irritation of the skin. If the suppuration is very extensive this stage may be accompanied by marked ataxia, delirium or coma. The duration of the period of suppuration is from four to five days.

Stage of desiccation.—The drying begins upon the full development of the pustules, which is about the twelfth day of the disease. The inflammatory œdema of the skin begins to subside, while the more fluid portion of the ruptured pustule evaporates, leaving a crust behind. If there is no rupture of the pustule, the liquid portion will be absorbed and a dried scab result. In places where the eruption is confluent, a continuous crust will be formed, and at this period an unpleasant odor from the skin, at once peculiar and characteristic, is noticed. The crusts form first upon the face, then upon the trunk and upper extremities

and finally, on the lower extremities, according to the order in which the eruption first appeared. More or less fever may be present at this time, although the symptoms generally abate as desiccation progresses.

Stage of desquamation.—Finally, the scabs and crusts are thrown off. This usually occupies several days, but sometimes a much longer time will elapse before all the crusts are detached. If the inflammation of the skin has been mild, nothing but a reddening will be left, which soon disappears. Generally, however, more or less of the corium has been involved, and hence the production of permanent cicatrices, which may be linear or circular. This is the so-called pitting. The disease at times runs a somewhat irregular course. Thus there may be a severe pharyngitis, laryngitis or bronchitis from the presence of the eruption in these situations. Erysipelas may appear upon various parts of the body. The eruption may commence as early as the second day, in which case it is said by some and denied by others that it will usually be confluent; or its appearance may be delayed until the fifth or sixth day, thus forecasting a mild grade of the disease.

Diagnosis.—While it is impossible to make a certain diagnosis before the appearance of the eruption, the following symptoms are significant: Severe chill, repeated vomiting, headache, intense pain in the small of the back, with a high fever. Even as late as the first appearance of the eruption, it is somewhat difficult to make a positive diagnosis, but the appearance of vesicles seated on papules, and which become umbilicated, may be considered pathognomonic. Ash colored spots on the mucous membrane of the mouth may be present at an early stage of the disease, showing a beginning of the variolous eruption in this situation before the skin has become involved, hence a careful inspection of the buccal and faucial surfaces may assist in the diagnosis in doubtful cases. For the stage of invasion the petechial exanthem located principally in the crural triangle, the base of which is a horizontal line near the umbilicus, with the apex extending over the os pubis and between the thighs, is pathognomonic of variola. The diffuse

erythema sometimes present, especially in the initial stage of varioloid, may resemble that of scarlatina, but it is less diffused over the skin, is bright, more rosy, more mottled, and not such a finely punctated rash. Even if hæmorrhages begin to appear, a hæmorrhagic scarlatina might be suspected, but ecchymoses in the conjunctiva only take place in variola. Again, this diffuse erythema, as well as the beginning true small pox eruption, may be distinguished from that of scarlatina by the following characters: Scarlatina begins suddenly with vomiting, an unusually rapid pulse, and a sore throat, the redness being limited to the tonsils and pharynx, the posterior wall of the palate and velum, while the anterior wall is unaffected. The initial fever is about twelve hours and increases with the spread of the eruption. In small pox the initial fever lasts forty-eight hours, and remits soon after the eruption appears.

In scarlatina the rash first appears on the neck and chest, and speedily extends to the trunk and extremities. The face remains often nearly free, and even when much affected, the skin about the mouth and nose is quite white by contrast. In small pox the forehead, lips, chin and wrists are earliest affected, the eruption proceeds in orderly course during two days over the trunk and extremities. Very soon the maculæ become hard, papular and shot-like to the touch and, in about twenty-four hours, a little serum appears on the summit of the papules, when the diagnosis is beyond doubt. The general symptoms of variola have been previously detailed and will assist in the diagnosis.

In measles there is an initial stage of seventy-two hours marked by catarrhs of the respiratory tract and conjunctiva, producing cough, coryza, sneezing and lachrymation; the fever is moderate during this stage, but increases with the appearance of the eruption until its maximum is attained, thus strongly contrasting with the high initial fever and violent onset of variola, and the rapid remission of fever after the full eruption appears. The papules of measles are also larger, irregular in shape, flat, broad, with indented margins, only slightly elevated, feel more superficial, with healthy skin between

them, and appear on the back, and head, and face almost simultaneously. They never become vesicular or pustular.

In varicella the maculæ appear simultaneously with the first febrile symptoms, which are usually very slight, or within twelve to twenty-four hours after. They rapidly became clear vesicles within a few hours, seated on a level surface of skin, without any indurated base or surrounding inflamed areola, unless irritated. They appear first on the face, scalp and upper half of the body. Very early two or three broad, fully formed vesicles are often found between the scapulæ, further advanced even than on the face. The vesicles come out in successive crops, so that recent ones appear between others one or two days older, and already nearly dried up, an occurrence never observed in variola. They do not develop into pustules, unless irritated, but speedily desiccate and do not leave permanent scars. They are rarely umbilicated, but may be, though to a less extent than in variola.

VARICELLA.

Syn.—Chicken-pox; swine-pox.

Definition.—Varicella is a mild, contagious fever, accompanied by the formation of vesicles over the surface of the body.

Symptoms.—Varicella occurs rarely after the age of ten years. The period of incubation is the longest of all the eruptive fevers, being from thirteen to seventeen days. The disease begins with slight headache, malaise, and sometimes a general chilly feeling. The fever is mild and the pulse not much quickened, so that patients are generally not confined to bed and may be ignorant of any special ailment before the appearance of the eruption. In a few hours or simultaneously with the onset of the fever, the rash appears, first on the trunk and head and spreads rapidly to the extremities. There is first a formation of small hyperæmic maculæ that are disseminated, are not so close or large as in measles, and are entirely without the hard, shot-like feeling of the commencing papules observed in variola.

In a few hours clear vesicles, like blisters made by small drops of boiling water, have formed over the maculæ and are surrounded by a narrow circle of hyperæmia, but with an entire absence of the indurated, inflamed base that is found underneath the variolous vesicles. There is very rarely any umbilication of the vesicles, unless irritated, and they exhibit no uniformity of shape. They vary in size from that of a pinhead to that of a pea and rarely become fuller ; some are large and oval, others acuminated and hemispherical. They appear in successive crops, new red spots appearing close by fully formed vesicles. The inflammation does not extend down to the corium, but only involves the superficial layer of the skin. The vesicles cause some itching and the individual ones reach their full development by the second day, when their contents are almost transparent. This liquid soon becomes turbid and desiccation commences, and is often quite marked within twenty-four hours. By the fifth day small, thin scales have formed, which are soon detached. A little reddening is left, but no pitting, except in rare cases in which the upper part of the corium has been involved. This may happen from continuous irritation of the vesicle by scratching. The vesicles may be abundant, but are rarely confluent, and often occur on the mucous membrane of the mouth, throat, and, exceptionally on the conjunctiva, nasal and genital mucous membranes of girls and prepuce of boys.

Diagnosis.—It is extremely important to differentiate this disease from variola. In the latter affection the invasion is severe and lasts two or three days. The maculæ speedily become small, hard papules and go on to the development of the characteristic vesicles and pustules. The first appearance of varicella vesicles is usually on the head and trunk, between the scapulæ, and they spread to the extremities rapidly. In variola papules appear first on the forehead, chin and wrists and require a day before the top of the hard papule begins to be vesicular. (See variola, page 106). The appearance of freshly developing maculæ in the midst of or in the neighborhood of mature vesicles, the exanthema thus coming out in successive

crops, is characteristic of varicella. The exanthema of measles appears after seventy-two hours of catarrhal symptoms, with generally higher fever, which increases as the eruption develops, and the spots are larger, more diffused, darker colored and do not vesiculate.

In scarlatina the generally severer onset of the symptoms, the early and characteristic sore throat; the fine punctate rash, the points of which are much closer; the rapid diffusion of uniform redness over larger surfaces, on which no vesiculation occurs within a few hours, will readily distinguish it from the first stages of varicella. Varicella generally appears first on the face and the hairy scalp, where it is usually abundant; in scarlatina the neck and flexures of the joints are the early spots of predilection and the face is comparatively free. The presence of vesicles in the buccal and palatal mucous membranes will early distinguish varicella from scarlatina.

VACCINIA.

Syn.—Cow-pox.

Definition.—Vaccinia is an eruptive disease of the cow, with a lesion resembling variola, that has been induced in man by inoculation to prevent susceptibility to variola.

Symptoms.—After a period of three or four days' incubation the specific inflammation begins. At first a few small red, indurated papules form at the seat of inoculation; these increase in size, and by the fifth day there begins to be a collection of lymph at the inflamed spot which, raising the cuticle, forms a few vesicles. At the sixth day the diameter and size of the vesicles are increased and they become umbilicated. The vesicles reach their full development by the eighth day. They are multilocular, like those of variola, and there is now formed around them an inflammatory areola to the extent of one or two inches. By the ninth day the lymph begins to become distinctly purulent, the areola becomes larger and more marked and a slight fever usually develops, with local discomfort and itching. The constitutional symptoms are of a very mild grade.

The pustule generally reaches its full development by the tenth day, when the lymphatics leading from it may be painful and somewhat swollen, with enlargement of the corresponding lymphatic glands. At the eleventh day the inflammation begins to decline ; the areola narrows, the fever subsides, and the local induration and tenderness abate. Desiccation begins in the centre of the pustule by absorption of its liquid contents, and gradually extends over the whole of the pock, producing a hard, dark-colored scab that usually falls off some time before the twenty-fifth day. A reddish cicatrix is left which eventually becomes whiter than the surrounding integument and presents several minute, but well-marked depressions.

When bovine virus has been used the pock is of larger size and usually takes a longer time for its full development. Sometimes the papules may not be produced until the tenth or twelfth day, and the vesicles and pustules will then be deferred to a corresponding period, and the crusts may not be cast off before the fourth or fifth week. The bovine lymph also produces some increase in severity of the constitutional symptoms.

Certain general eruptions have occasionally been noted in connection with vaccinia that are undoubtedly caused in some way by the constitutional effects of the virus. The rash may appear within two days after vaccination or not until the pustule is fully matured, by the ninth or tenth day. The first variety of eruption to be considered is roseola vaccinia, which usually appears from the eighth to the tenth day, remains well marked for about two days and then gradually disappears, leaving behind a slight pigmentation. There may also occasionally be slight desquamation. Evidences of a slight constitutional disturbance, such as malaise, with a mild febrile movement, may accompany this eruption. The rash may appear like scarlatina or measles ; in the former case consisting of a diffuse and bright red coloring of the skin ; in the latter, of patches of dusky red mottling. It has been said to resemble German measles. At times, after beginning as a macular form it afterwards spreads over the whole body as a uniform and diffuse efflorescence.

Many small vesicles sometimes dot over the patches, but they soon dry up without becoming pustular.

Another eruption that sometimes appears by the second day, but more frequently not until the ninth day after vaccination, bears a close resemblance to erythema multiforme. It appears more frequently on the extremities, although not excluded from other parts of the body. The patches may be unusually large and undergo the typical slow changes in form and color.

It is not at all unusual for a vesicular eruption to develop with vaccinia. The vesicles are small and are either confined to one region or generally diffused over the body. They may either develop in successive crops or synchronously with the vaccine vesicle. The contents soon dry up and do not at any time contain the virus; neither is there any umbilication of the vesicles. Cases of true generalized vaccinia have occasionally been reported, accompanied by the development over the body of vesicles and pustules which resemble the typical lesion upon the point of vaccination and that contain an inoculable fluid. It is still a disputed question, however, whether the vaccine virus is able to act upon the whole system in the same manner as the poison of variola.

An urticaria occurring upon the skin and mucous membranes sometimes appears a day or more after vaccination. It is accompanied by the usual burning sensations and does not differ from urticaria produced in other ways.

An eruption resembling that of impetigo contagiosa has sometimes been observed to follow vaccination, but it probably does not depend upon the same cause.

The appearance of bullæ by the second day, or more frequently by the eighth or ninth day after vaccination has occasionally been noted. The bullæ are isolated and have thin walls that soon rupture, forming a light scab. Sometimes the contents become turbid and desiccate without undergoing rupture of the walls. The bullæ are rarely so closely grouped as to become confluent. A number of cases have been reported in which this eruption bore a close resemblance to varicella.

In a very rare number of cases that have been observed the cow pox has taken on a hæmorrhagic form. Numerous petechiæ have appeared on the body a few days after vaccination, and have not begun to fade until about the sixteenth day. In one of these cases that has been reported the purpuric eruption appeared in a child that had apparently been previously in perfect health.

It is well recognized that there may occasionally be a connection between vaccination and certain of the well marked skin diseases. There have recently been not a few cases of eczema and pustular eruptions reported as being associated with vaccination. In these cases the constitutional impress of the vaccine virus has been strong enough to indirectly cause the development of skin diseases in persons predisposed to them. The cause of this phenomenon is not found in any specific action of the virus, as cases have been reported of psoriasis developing after scarlatina, and the latter disease cannot be considered as a specific cause of the former.

Considering all the cases of vaccinia, eruptions occur in comparatively few instances. They have probably occurred more frequently of late, because the more active bovine virus now used is able to induce severer constitutional effects than the long humanized virus.

Before leaving the subject of vaccinia it may be well to notice certain irregular forms it occasionally assumes. Thus a papulo-vesicle may be formed that is conoidal or pointed in shape instead of having the central umbilication ; it develops quickly and leaves behind a feebly marked cicatrix. In other cases a vesicle, irregular in shape, appears by the second day, which soon dries up, leaving a pigmented base when the scab is thrown off. Sometimes a vesicle will run its regular course, but after a crust forms, a deep ulceration begins under it that may cause much local and general disturbance. The so-called " raspberry sore " is usually produced by the coalescence of a few small papules forming a pigmented tubercle. It itches a great deal and may grow as large as a pea. It slowly disappears after a few weeks, leaving behind some pigmentation.

These irregular manifestations must not be regarded as protective after a primary vaccination.

Erysipelas sometimes develops after vaccination in persons whose systems are in a condition favorable for its occurrence. It may occur early after the operation or during the pustular stage or be delayed until the separation of the scab. It is always caused by absorption of some septic matter from the seat of vaccination.

IMPETIGO CONTAGIOSA.

Definition.—An acute, inflammatory, contagious disease, characterized by the formation of isolated, superficial, flat or raised vesicles or blebs which quickly pustulate, and afterwards dry to thin, yellow and very slightly adherent crusts.

Symptoms.—This form of eruption was first described as a separate disease by the late Dr. Tilbury Fox and is admitted as such in this work in deference to the views of many able dermatologists, although in nearly all the cases I have seen with a corresponding form of eruption, the condition was secondary to other diseases and especially associated with the presence of pediculi. The eruption is frequently preceded by febrile symptoms and commences as small, isolated, flat or raised vesicles, or small bullæ, which rapidly become vesico-pustules. The vesicles afterward increase in size, are round or oval in form, and, if large, are sometimes umbilicated. In some anomalous cases the vesicles are few, ill defined and irregular in shape. An individual vesico-pustule is about the size of a large split pea and the number present is always small, rarely exceeding ten or twelve. They are at first isolated, but if closely seated may subsequently coalesce and form a patch. In a few days, they dry to flat, yellow or straw-colored, granular looking, very slightly adherent crusts, beneath which, especially in strumous subjects there is slight excoriation. In the severer forms of the eruption there is a slight areola around the spots, which is absent in mild cases. When the crusts fall off the skin beneath appears erythematous, which condition afterward

disappears. The vesicles appear simultaneously or successively, and have a definite duration, lasting from seven to ten days. The eruption does not pain and itches very little. Its most frequent seat is the face and hands, but it may appear on other parts of the body, and it has been reported as even occurring upon the mucous membrane of the eyes and mouth. On the scalp the patches are circular, isolated, dry to a flat scab and produce matting of the hair.

Etiology.—The eruption is met with especially in ill nourished or uncleanly persons and generally in children. It is contagious and auto-inoculable. It has been observed to follow vaccination. As already stated I have frequently met with a similarly appearing eruption, which has almost invariably had its origin from persons with pediculosis capitis, and the pus from ill nourished persons being especially contagious and auto-inoculable, a number of persons have become affected, and in this manner the eruption appeared to be epidemic in character; hence for the exclusion of pediculi, as the cause of the eruption in a given case, it is not sufficient to prove their absence in the case of the person under observation, but also in the individual first attacked.

Pathology.—Differently formed vegetable organisms discovered in the crusts have been described by different observers as the cause of the eruption, whilst others, including Tilbury Fox, have been unable to demonstrate the presence of any special fungus in the vesicle, and regard those organisms which have been occasionally found in the crust as occurring accidentally. As yet there has been nothing found in the vesicles or crusts except the pus to account for the inflammation.

Diagnosis.—The eruption may be confounded with impetigo, eczema pustulosum, varicella, pemphigus and ecthyma. The quasi-epidemic character, the contagiousness of the eruption, the antecedent pyrexial symptoms, its occurrence in children especially, the seat, the yellow or straw-colored, flat, slightly adherent "stuck on" crusts are sufficient points for the diagnosis. In impetigo the eruption is pustular, the pustules are raised, the patches large and the crusts thicker than in the contagious form.

In eczema pustulosum there are no antecedent febrile symptoms, the pustules are not isolated, there is itching and infiltration of the skin, and the crusts are thicker. The duration of existence of a patch is also indefinite. In those cases, however, in which the eruption is seated on the scalp it is frequently impossible to make a positive diagnosis. In varicella the smallness of the vesicles and their distribution over the whole body make the diagnosis easy.

Prognosis.—With appropriate treatment the eruption rapidly disappears.

Treatment.—The treatment is general and local. Good food, pure air and cleanliness should be insisted upon. Tonics are to be given if the general condition of the system indicates their use. Locally, zinc salve, or still better, white precipitate ointment should be applied to the patches of eruption, and any pediculi or nits present destroyed by kerosene or some other anti-parasitic remedy.

ANTHRAX.

Syn.—Malignant pustule.

Definition.—A spreading, grangrenous inflammation of the skin, the result of inoculation with the specific poison derived from animals suffering from anthrax and associated with the development in the blood of the bacillus anthracis. It commences as a vesicle on the exposed skin ; the gangrenous process rapidly invades neighboring tissues—and may ultimately cause death by septic infection.

History.—Malignant pustule is a disease usually communicated to man from the lower animals ; it being one of the manifestations in the human subject of infection by the virus of the disease known to veterinaries under the various names of anthrax, charbon, splenic apoplexy or fever, Texan fever and braxy.

Anthrax has been known to occur as an an epizootic disease among solipeds, horned cattle, and birds, from the earliest times, and every outbreak has been signalized by a large human

mortality among those who handled the diseased cattle, or partook of their flesh. Thus, in 1716, near Naples, 60,000 persons perished from eating the flesh of animals dead of anthrax. In 1756 and 1785 it prevailed among the cattle on the islands of Minorca and Granada, respectively; and both the Balearic herdsmen and the West Indian negroes succumbed in great numbers to the fatal malady. At about the same time it prevailed extensively in France, and it has been endemic there and in many other parts of Europe ever since. In America it is a disease rather less commonly seen, but just as fatal as in Europe.

FIG. 26.—Capillaries in a villus of intestine, containing the bacillus anthracis. The bacilli are visible as definite rods. Multiplied 700 diameters. (Koch.)

Anthrax in cattle is probably due to the reception into the system and the development in the blood of an organism termed *bacillus anthracis*. Inoculation of the blood or tissue of a

charbonous animal causes in the human being the same disease, most commonly in the form of malignant pustule ; and the inoculation of animals with the material from malignant pustule causes anthracoid disease. The bacillus is present in all forms.

The bacillus anthracis (Cohn) is a small, rod-shaped body whose length equals about twice the diameter of a human red-blood corpuscle. The rods exhibit power of motion in a suitable habitat and multiply rapidly—either by fission or by spore-production. That it is the essential element of charbonous disease has been strenuously maintained by Cossar Ewart, Pasteur, and Koch. It is but fair to state, however, that other observers, equally trustworthy, have found the virus to persist under conditions such as treatment with absolute alcohol, and compressed oxygen, and filtration through porous porcelain ; conditions incompatible with organic life even of the lowest kind. Panum long ago pointed out that probably some body of the nature of a ferment was the active agent. In a recent elaborate review of the whole subject, Burdon-Sanderson reaches no positive conclusion ; and while admitting the constant presence of the bacillus, inclines to the belief that the contagium of the disease belongs to the class of " unformed ferments."

Three varieties of anthrax are distinguished by veterinarians ; all occur in the human subject—but in one only are we at present interested. These varieties are :

1. *Charbonous* or *anthrax fever.*—A rapidly fatal general disease with hardly any external manifestations. The patients sink in a few hours with symptoms of profound septicæmia.

2. *Symptomatic charbon.*—When the animal lives long enough to permit the development of the characteristic flat subcutaneous tumors, and the intestinal and pulmonary inflammations.

3. *Essential charbon.*—Resulting from inoculation and unpreceded by fever—being that form of anthrax so well studied by Dr. William Budd, and by him called malignant pistule.

Etiology.—Malignant pustule is the result of the implanting of the charbonous poison upon any part of the body. As might be expected, it occurs almost invariably upon those un-

covered parts of the body which are exposed to inoculation. Handling the carcasses and bones of animals dead of the disease is the usual mode of infection; and butchers, tanners, etc., chiefly suffer. Eating of the meat, or using the butter or milk of diseased animals will cause anthrax. A well recognized mode of contagion is through the medium of various insects, those with piercing probosces, like gad-flies, are most often carriers of the disease; but even flies can bring the poison from animals to man on their soiled wings and feet. The flies themselves, though the bacillus has been found in them in abundance—seem to be incommoded by the disease.

The hair and wool of plague-stricken animals long retain the virus, and many instances are on record where wool-sorters, furriers and tanners have contracted charbonous disease either by local inoculation or by the inhalation of the dust containing it. The tenacity to life of the virus is remarkable; and it is probable that it is carried to the surface from the carcasses of buried animals by the earthworms—and then, through the vegetation, produces the disease anew among the cattle.

Symptoms and course.—Twelve to fifteen hours after inoculation a sensation of burning or itching draws the patient's attention to a small spot looking like a flea-bite. This spot is soon elevated into a papule—and the papule shortly becomes a vesicle; underneath this is a small, hard, well-defined nucleus—the "parent nucleus" of Virchow, the "Maetka" of the Russians. The vesicle is filled with a bloody serum, and is ruptured by the patient, or dries up. In thirty-six hours a dark-brown or black scab is left, surrounded by a dark-red brawny induration—covered perhaps with secondary vesicles like the primitive one. This eschar may extend until it attains the size of a silver half dollar. The entire affected tissue becomes gangrenous; sensibility is lost, and it may be cut or burned with impunity. The termination of the process varies. If the patient is to recover, the disease ceases to advance—and the gangrenous mass is cast off by the inflammation and ulceration of the neighboring healthy parts; to be replaced by new connective tissue and cicatrices. If the process con-

tinues—extension of the œdematous infiltration and the gangrene, together with the symptoms of constitutional septic infection end the scene.

Meantime, the general symptoms are sometimes marked, but may be absent even in severe forms of the disease. There may be high febrile movement, 105° F., with violent delirium and other brain symptoms; or there may be hardly any fever, but great mental depression and physical exhaustion, with low muttering delirium, and coma. In fatal cases, syncope, the brown, dry tongue, the shrunken features and glassy eyes, or cyanosis and embarrassed respiration, foretell the end. Lymphangoitis, and suppurative axillary adenitis are common. If recovery is to take place, the pulse revives, the "crisis" of the fever occurs, perspiration sets in, and the healing process commences in the local lesion.

The pustule itself is almost invariably situated on the hands, arms, or face, most commonly on the back of the hand. But the poison may be carried to any external part of the body—and even, according to the latest investigations, be conveyed with food and drink into the gastro-intestinal, or with the inhaled air into the broncho-pulmonary tract, and there cause the characteristic lesion. With these latter forms of malignant pustule, as well as with the more general kinds of charbonous infection, we have here no concern.

The entire absence of marked pain, and the manifest local anæsthesia are peculiar and perhaps characteristic symptoms in so severe a process.

Pathology and Morbid Anatomy.—Post-mortem, we find the subcutaneous cellular tissue infiltrated with gas, the product of a putrefaction that sets in with extreme rapidity. The blood is profoundly altered, chemically and physically; the white cells are in excess; the red cells are deformed, the hæmoglobin leaves them; bacilli and their spores, and granular detritus, found in abundance; the fluid is black, tarry and viscid. Hæmorrhages, varying from petechial spots to large ecchymoses are present in numbers, under the skin, in all the serous and mucous membranes, and in all the internal organs and

muscles; all the organs are intensely congested and softened. Purulent effusions into the serous cavities are common. Locally, the gangrene at the site of the pustule has extended deeply into the subcutaneous parts; the surrounding tissues contain blood extravasations—and the meshes of the connective tissue are infiltrated with a semi-gelatinous, blood-stained fluid. A noteworthy point is the absence of inflammation and of pus, which only appear when separation of the gangrenous part is about to occur. Lesions in every respect analagous to the external pustule are found in the bronchial mucous membrane, and also, though rarely, in the gastro-intestinal.

Diagnosis is very difficult in the early stages of malignant pustule, and it is unfortunately in those stages only that we can expect much from treatment. A very evident history of contagion—or a special prevalence of anthracoid disease at the time, may be of assistance. Later, recognition is easy; in carbuncle, the only disease with which malignant pustule is liable to be confounded, the numerous openings in the skin, the pain, the site, together with the absence of the above-mentioned characters of the pustule, will enable us to avoid error. An abundance of the peculiar bacilli may be found in the bloody serum of the vesicle, and in the fluids of the gangrenous parts. Inoculation of mice or other animals may be resorted to for confirmation.

Prognosis is decidedly unfavorable. A large proportion of cases of the milder, primarily cutaneous forms of charbonous disease succumb. The fatality of malignant pustule varies in different epidemics—but 33 per cent. of deaths is, if any thing, an understatement of the mortality.

Treatment.—The local treatment is of much importance, and an early recognition of the disease renders it of most avail. Free cauterization, or excision, or both, of any suspicious vesicle or papule in one exposed to the disease, is imperative. The best results have been obtained by crucial incisions, cauterization by pure carbolic or fuming nitric acid, or the actual cautery, followed by a dressing of carbolized oil, or carbolized lint. Lately, complete excision of the pustule has been advised,

and I am inclined to think if the disease is recognized early, that it offers the greatest chances of success.

The constitutional treatment is mainly that proper for all adynamic, typhoid conditions. Nutrition should be sustained to the greatest possible extent; the cardiac and respiratory stimulants, alcohol, ammonia, ether and atropia should be used as necessary. Quinine in large doses, and the inhalation of the vapor of carbolic acid have been favorably reported on. Later, if the patient survive, tonics, in the widest sense of the word, are indicated. The treatment of the other forms of charbonous disease belongs to the province of general surgery.

Compulsory destruction by fire of the carcasses of animals dead of anthrax; the prohibition of the importation of hides, bones, etc., from localities where the disease is known to be epidemic, or even, if possible, the adoption of some general method of disinfection of these raw goods; these form the basis of the more important, the prophylactic, treatment of the disease.

It is, perhaps, proper to mention here another form in which charbonous disease manifests itself upon the external integument, though its rare occurrence makes it of less importance than malignant pustule. It is known as malignant œdema of the eyelids, and consists of a more or less extensive swelling of the skin, with subcutaneous infiltration. No external lesion is visible; there is simply a hard, indolent, pale swelling, the skin over which is tense and smooth. It usually affects the eyelids, and spreads thence to the nose, cheeks, and ears, but occasionally also it appears on other parts. The constitutional symptoms are grave, and a fatal termination in from two days to a week is the rule. Treatment is the same as for malignant pustule; the cauterization of the œdematous parts must be very thorough indeed if any good is to be done by it.

EQUINIA.

Syn.—Glanders and Farcy.

Definition.—A specific contagious disease, due to the introduction into the system of the peculiar virus derived from solipeds or human beings suffering from glanders and farcy. It is a febrile affection of a malignant type, characterized by specific inflammatory lesions of the nasal and respiratory mucous membranes, of the lymphatic system, and of the skin.

History.—Glanders and farcy are two varieties of a disease which has long been known to occur amongst horses, asses, and mules, but which has only within the last century been recognized and described in the human subject. Other animals are also liable to the disease, but cattle, pigs and fowls resist contagion, even when inoculated.

Formerly looked upon as two distinct diseases of frequent occurrence amongst horses, glanders and farcy are now known to be but different manifestations of one disorder, which, in consequence of the somewhat close analogy between it and vaccinia, has been designated equinia. Glanders is that form of equinia in which the nasal passages show the chief local lesions, whilst in farcy the lymphatic system is prominently affected.

In 1821 the attention of physicians was first called to the fact that a number of cases of a peculiar, severe and even fatal disease had occurred in persons whose occupations were such as to bring them in close contact with glandered and farcied horses. At that time Muscroft published an account of a case in which the whipper-in of a hunt wounded himself while cutting up a glandered horse for the kennel, and died in two weeks of undoubted glanders. Other cases were soon recognized, and in 1828 Coleman proved by recorded cases that the disease was communicable from the horse to man, and from man to the ass. Somewhat later Rayer, in an exhaustive paper, collected all that was then known of the disease; and finally, in

1862, Zimmermann proved its transmissibility from one human subject to another.

Equinia is a rather rare disease; yet in the city of Paris alone three or four deaths are due to it every year. In America it is not very uncommon; some four or five cases have occurred in as many years among veterinary surgeons in New York city alone—veterinarians, cavalry-men, stablemen, etc., are naturally most often exposed; and wherever horses are collected and confined in large numbers, as in camps and on shipboard, it is almost certain to appear and infect human beings.

Etiology.—Equinia is due to inoculation by a specific contagious poison, always derived, in man at least, from one already suffering from the disease—almost invariably from a glandered or farcied horse. In the human subject it never originates, and whilst most cases of equinia in animals are directly traceable to contagion, many veterinarians believe that, under certain circumstances, the disease originates *de novo* in horses. (Williams). What these circumstances are supposed to be is not very clear. Bad air, over-crowding, telluric conditions, etc., are mentioned; but they hardly agree with our ideas of a specific virus such as this is. So far as we are concerned, equinia, in man, is always traceable to direct or mediate contagion.

Nothing is known as to the exact nature of the virus, which is present in the blood and urine, but especially in the "jetage" from the ulcerated nasal mucous membrane, and in the contents of the farcy buttons. Horses are very liable to spread the disease by their snorting to get rid of the viscid mucus that clogs the air passages, thus scattering the virus in small particles through the air and upon all neighboring objects, where it may long remain and retain its virulence. It is probable that an abrasion of the skin or mucous membrane is necessary for the reception of the contagion, certain cases to the contrary notwithstanding.

Symptoms and course.—After a period of incubation of two or three days, if infection is due to direct inoculation, or of several weeks, if the virus has been received on the unbroken mucous

membranes, the symptoms of constitutional infection appear. Acute and chronic forms of both the glanders and the farcy variety of the disease are described ; but no clear distinctions between them can be drawn clinically.

The first general symptoms are those that may mark the advent of any acute febrile disease—headache, malaise, costiveness, anorexia, slight chills, etc. Soon the temperature rises, and the fever may be continued, or irregularly remittent. Pains and even swellings of the joints are so constant and severe that all authorities warn us against mistaking the disease for rheumatism.

Meantime the wound, or the place where the virus was inoculated, has inflamed ; an erysipelatous redness appears around it ; destruction of tissue goes on rapidly, and we soon have an unhealthy, chancroidal-looking ulcer, with undermined edges, and discharging an offensive sanies.

The characteristic affection of the mucous membrane appears early, and usually affects first the naso-pharyngeal surface, spreading from thence to contiguous membranes, and to the skin. Small whitish, tubercular-looking masses appear deep in the membrane ; and the resultant diffuse inflammation causes a discharge, which, at first yellowish and muco-purulent, soon becomes foul, ichorous, and bloody. The granular masses soon break down, and the unhealthy ulceration spreads rapidly, until the whole surface looks worm-eaten. Necrosis of the turbinated and ethmoid bones commonly occurs. The inflammation spreads from the mouth and anterior nares to the skin of the face, and blebs filled with a bloody serum and large ulcerations appear ; the larynx is affected, and œdema of the glottis may suddenly end the disease.

The lymphatic vessels, meanwhile, in the neighborhood of the lesion, are swollen, and present a knotted, cord-like appearance ; the lymphatic glands are acutely inflamed, and form the so-called farcy-buds or buttons. The lymphatic involvement spreads through the body, the glands suppurate, and large abscesses form.

In accordance with the greater involvement of the mucous

membrane or of the lymphatics, the disease is designated glanders or farcy.

By about the twelfth day the skin eruption manifests itself, and is preceded or accompanied by profuse fœtid sweats. The exanthem is characteristic, and consists at first of little red spots, like flea-bites, scattered over the body ; later they become apparently papular. There are, however, no real elevations ; they seem to be small, circumscribed collections of neoplastic matter deep down in the corium, situated on an inflamed, livid base. As the collection breaks down, the lesion apparently becomes first vesicular, then pustular. Eventually the surface is destroyed, and unhealthy circular ulcers, spreading and discharging a brown sanious fluid, are left. Similar cell-collections in the subcutaneous tissue lead to the formation of large, painful, indurated masses, which ultimately cause extensive ulceration and sloughing. Large black bullæ are observed on various parts of the body, especially on the fingers, toes, and genitals, and are followed by gangrene of the parts.

Meanwhile the general symptoms increase in severity, and the patient falls into a typhoid condition ; a foul, bloody discharge wells from the nostrils ; the face is livid, swollen and ulcerated ; extensive pus collections and spreading gangrene occur in various parts of the body, especially in the lungs and large joints. Death by exhaustion occurs in two-thirds of the more acute class of cases before the seventeenth day ; but the disease in other cases may last one to twelve months. Not all the symptoms recorded are present in any one case, and in accordance with the general rapidity of the processes, we get acute and chronic glanders, acute and chronic farcy.

Pathology and Morbid Anatomy.—The growth of the peculiar nodules above mentioned are the cause of most of the lesions of the mucous membranes, skin, lymphatics, muscles, lungs, etc. They consist of a closely packed collection of lymphoid cells, with numerous free nuclei. The nodules they form are about the size of a small pea, and are at first hard ; but they soon undergo fatty degeneration, and the mass breaks down. At first discrete, they soon coalesce, and the re-

sulting ulceration lays bare large tracts of surface and penetrates deeply, denuding cartilage and bone, and causing necrosis. This same small-celled mass infiltrates the lymphatic glands and causes the farcy "buds;" it appears in the skin, and causes the peculiar eruption.

The apparent pustules are found after death to be white, surrounded by a livid areola, and containing a puriform liquid consisting of the broken down and fattily degenerated round cells in their interior. If the softened matter has been evacuated during life, as sometimes occurs, we find small circular ulcerations in the skin in their stead.

Larger collections of pus in the subcutaneous cellular tissue are not uncommon.

Abcesses of the joints, acute pneumonia and gangrene of the lung are frequently seen.

The close analogy which equinia bears to tuberculosis, especially as regards its pathology, has led Villemin to suspect a relationship between the two diseases.

Diagnosis.—The peculiar naso-pharyngeal lesions, the discharge from the nostrils, the cutaneous eruption, the marked involvement of the lymphatic system, sufficiently distinguish the fully developed disease. In the early stages, and in the absence of a history of infection, it may, as above stated, be mistaken for rheumatism, and even for pyæmia or typhoid fever; but the subsequent course of the disease soon clears up the diagnosis. The more chronic forms have often undoubtedly been confounded with syphilis.

Prognosis.—Equinia is a malignant disease in every sense of the word, and the prognosis is extremely unfavorable. The more acute forms are very rarely recovered from, though there happens to be living in New York city at present a person who has survived it. In the more chronic forms the prognosis is slightly better, the mortality being about 50 per cent.

Treatment is of little avail. The cauterization by potassa-fusa, or better, the excision of any suspicious wound, is to be practiced. All those engaged in the care of cases of equinia should wear rubber gloves when they handle the patient. Stimu-

lation and general support must be relied on. Quinine and tincture of the chloride of iron may be freely given. Many other drugs are recommended, but experience has not sanctioned their use. Abscesses should be opened early, and the resulting cavities should be kept as clean as possible with antiseptic injections, and perhaps poulticed. In the glanders form of the disease the nose should be thoroughly syringed out several times a day with carbolic acid or thymol solutions.

ERYSIPELAS.

Syn.—Rose ; St. Anthony's fire.

Definition.—A specific asthenic febrile disease, accompanied by an inflammation of the integument or mucous membranes, which tends to spread indefinitely, and may involve the underlying connective tissue and deeper structures.

Symptoms.—Under the name erysipelas are usually described several affections which have for their chief local manifestation a peculiar inflammation of the skin and subcutaneous cellular tissue. At least three varieties are recognized, in accordance with the severity of the disease as shown by the extent of the superficial process.

These varieties are :

1. *Cutaneous Erysipelas.*—Where the skin only is attacked.

2. *Cellular Erysipelas*—Or diffuse cellulitis, where the inflammation is limited to the subcutaneous connective tissue, the fascia, and the inter-muscular areolar places.

3. *Cellulo-Cutaneous Erysipelas* or phlegmonous erysipelas, where both the skin and the subcutaneous tissue are involved.

Besides these there is described erysipelas of mucous membranes, and of the lining membranes of veins and lymphatics.

All these affections belong rather to the province of surgery than to that of dermatology ; but in certain cases the manifestations upon the skin form the most important part of their symptomatology, and they are generally included in systematic works upon the diseases of that organ. Only the first-men-

tioned form, simple cutaneous erysipelas, properly belongs here, and to that we will confine our attention, referring the reader to the works on general surgery for the other varieties.

In simple cutaneous erysipelas there is usually a period of from twelve to twenty-four hours, during which—as with the eruptive fevers—certain prodromal symptoms are manifested. These consist of slight recurring chills, followed by feverishness, nausea, anorexia, costiveness, headache, pains in the limbs, etc., etc. But the attention of the patient is not directed to the true cause till the local symptoms become prominent. As is usual, convulsions may in children replace the mild rigors. The invasion may, however, be sudden, and a rise of temperature to 103° F. may occur within twenty-four hours after the first general symptoms.

It is stated that swelling and tenderness of the lymphatic glands of the neck, together with pyrexia, are almost certain signs of the advent of facial erysipelas.

Within two days at most from the occurrence of the first feelings of malaise, the patient's attention is drawn to some part of the integument by itching and a feeling of tension, combined with a moderate amount of pain; and he finds an irregular, but sharply defined, raised, rose-colored spot, the surface of which is smooth and shining. It is sensitive to the touch, and pressure, dispelling the redness, leaves a yellowish stain behind. If the process has begun at a wound, the redness starts at its border, and spreads thence to the neighboring integument; if there is none visible, some unnoticed abrasion or acne-spot has formed the nidus.

Gradually the inflammation extends over the skin, advancing most rapidly along the lymphatic vessels, which stand out as red streaks radiating from the hyperæmic centre. In two or three days it has attained the size of a man's hand, or more; by four to six it has usually reached its greatest extent. The advancing margin is irregular and raised; and the general swelling varies with the amount of the subcutaneous connective tissue and its implication in the inflammatory process,

being often very great where, as in the eyelids and scrotum, it is abundant and lax. Small vesicles, or blebs, may form on the inflamed surface; they are filled with a serum that is usually clear, but in bad cases may be dark and bloodstained; these may rupture, and their dried contents form scabs, but there is no true ulceration.

After the eruption has attained its full size, it remains stationary for a period varying from three days to two weeks or more, and then the retrogressive changes begin. The vivid red gradually fades into a pale brownish-red, the sharp border becomes lost, the turgescence of the vessels and the hardness of the skin remit, and a small-scaled desquamation of the epidermis leaves the normal though somewhat discolored skin behind. The wound, if there was one, in which the secretions had become dried up, the edges swollen, and healthy repair ceased, begins to look better; laudable pus is poured out, and granulation begins.

Meanwhile the general symptoms have varied much, in accordance with the severity of the inflammation, and the importance of the part involved. The primary fever rises with the appearance of the eruption, and may attain a height of 106° or even 107°; it is usually remittent in type, with moderate evening exacerbations. The pulse is hard and quick—in bad cases feeble; its character is our best guide for prognosis. In severe cases delirium is common; the lips and teeth are covered with sordes; there is constipation or a fœtid diarrhœa; and, as in other acute fevers, there may be a small amount of albumen in the urine. These symptoms all remit when the local process begins to retrogress. The fever ceases, often suddenly; the tongue clears, and sleep and appetite return whilst desquamation is going on. But the patient often remains weak and anæmic for a long time.

Not all cases of cutaneous erysipelas end in so favorable a manner. The delirium present in the bad cases may, even without extension of the inflammation to the brain, deepen into coma, and the patient may succumb to the extent of the blood changes, or die simply of exhaustion. Complications, such as

pleurisy, pneumonia, meningitis, septicæmia or pyæmia, may determine an unfavorable issue. Even in mild cases relapses are very liable to occur.

It remains for us to describe several varieties of simple erysipelas which from their location, or their peculiar course, merit special enumeration.

I. *Varieties as to intensity.*—If the infiltration of the epidermis goes on to the extent of forming vesicles or bullæ, we have what is termed *E. Vesiculosum* or *E. Bullosum.* Sometimes the vesicles contain a purulent fluid, *E. Pustulosum*, and eventually we get *E. Crustosum.* The infiltration may even be so intense as to cause death of the skin from compression of the vessels, giving us *E. Gangrenosum.* This latter is especially liable to occur on the eyelids, penis, and scrotum.

II. *Varieties as to location.*—It occasionally happens that instead of the inflammation remaining localized to one spot, and then running its course, it is ambulatory; the process advancing at one edge whilst retrogressive changes are going on at another. It is then spoken of as *E. Migrans*, and may cover large tracts of surface, or even the entire body (*E. Universalis*); nay, the disease may complete the cycle, and go again over the ground where it began. In the migratory form lymphangoitis plays an important part; the disease may last four weeks, or more, and the patient is much reduced by the amount of the exudation and the fever. As might be supposed, the danger of the occurrence of complications is greatly increased in these cases; œdema of the brain, of the lungs, of the glottis, inflammation of the meninges, of the pleura, of the lungs, of the endo- and pericardium, of the joints, pyæmic processes, etc., are common. *E. faciei* is the most common form of cutaneous erysipelas that comes under our notice. It usually begins at the angle of the mouth or at the external nares or at the corner of the eye, near the point of junction of the skin and mucous membranes; scrofulous or specific rhinitis, caries of the nasal bones or teeth, chronic conjunctivitis, etc., can usually be detected at its point of origin. The amount of exudation into the loose connective tissue of the part is often enormous; the

face is dreadfully deformed—the nose, ears, eyelids, and lips stiff, swollen and shining—and the œdematous skin of the face perhaps covered with blebs. Saliva wells from the mouth, the tongue is brown, dry, and cracked. The temperature is often high, the pulse rapid and feeble ; much constitutional depression and brain symptoms are not uncommon. The process, nevertheless, usually terminates favorably.

If erysipelas occurs on the scalp, we have *E. capillitii*. The hairs hide the process to some extent, but the continuous headache and the local sensitiveness soon draw our attention to it. Sleeplessness, delirium, etc., are prominent symptoms in this form of the disease even when the fever is not high. A general falling out of the hair from exudation in the follicles follows its subsidence, and an obstinate seborrhœa is often left. The occurrence of meningeal or brain complications in these forms of erysipelas is shown by the retarded pulse, the sluggish pupils, jactitation, psychic depression, stupor or coma, or low muttering delirium. Though rare, the possibility of their occurrence renders E. capillitii a grave form of the disease.

E. Genitalium occurs in both sexes after operations or injuries of the genital organs. Fistulæ, strictures, and peri-urethral abscesses, ulcerative processes, specific or otherwise, or simple decomposition of the secretions of the parts in those of unclean habits, all these may start the inflammatory process. The œdema is very great, and the pain causes still further neglect, and extensive gangrene is by no means uncommon.

One of the commonest forms of erysipelas is *E. extremitalium*. It presents nothing peculiar. *E. vaccinale* has been quite frequently noticed of late years.

E. Umbilici is the erysipelas that occurs in new-born children, and usually starts from the navel. Its history is that of an ordinary erysipelas—and is to be carefully distinguished from the erysipelas of the new-born which is due to infection, and often occurs epidemically during the prevalence of puerperal fever and other septic diseases in our public institutions. This latter form is called by Bohn *E. neonatorum puerperale ;* it is very dangerous from the

fever—the local gangrene—hæmorrhage from the navel—enteritis—peritonitis—and pneumonia. It usually comes to a fatal issue; the mortality is certainly over 95 per cent. Inasmuch as the general constitutional infection forms by far the most important part of its history, the reader is referred for its history to the special text books on the diseases of children.

Complications.—Abscesses seldom occur in simple cutaneous erysipelas. Gangrene, as I have already said, is not very rare in certain forms of the disease. It is usually circumscribed, and leads to great deformities. In adynamic cases a typhoid state often sets in; the pulse is rapid, feeble, or dicrotic; the tongue is dry and cracked; the abdomen swollen; and the skin covered with a clammy sweat. The patient usually succumbs by the second week.

Various inflammations of internal organs, especially of those lying near the seat of the disease, are liable to occur. In the erysipelas of the trunk, peritonitis and enteritis; in that of the chest, pericarditis, endocarditis, pleurisy and pneumonia; in that of the face, meningitis—are noticed.

Pathology and Morbid Anatomy.—The redness and swelling which were so characteristic in the earlier stages during life fade away after death, leaving perhaps a faint yellowish tinge and slight œdema of the subcutaneous connective tissue. Blebs, pustules, and crusts remain, of course, post mortem. In the worst cases we find the ordinary visceral alterations of the malignant fevers—blood-changes and post mortem stainings; petechiæ are seen on the various membranes; the blood is dark, tarry, and imperfectly coagulable; there is softening and cloudy swelling of the various internal organs. Any intercurrent affection gives us, of course, the lesions appropriate to it—pneumonia, pleurisy, myocarditis, pericarditis, endocarditis, parenchymatous nephritis, myositis, etc.; but they present no specific characters and are just like the same affections when they occur from other causes.

Even the morbid anatomy of the erysipelatous process itself shows nothing specific, for the changes are those of an ord-

inary dermatitis, more or less superficial as the case may be. The exudation that infiltrates the epidermis, corium, and subcutaneous connective tissue is mainly a serous one, though cell-forms are not wanting in it ; they are the ordinary round cells, but degenerated, and containing highly refracting granules (fat). The cells of the rete are swollen, cloudy, and deformed ; their nuclei are often divided, and they are evidently in a state of active proliferation. The connective tissue fibrillæ of the corium are swelled and indistinct. The amount of the round-celled infiltration varies, of course, in different cases ; but it is only in the phlegmonous form of the disease that it is abundant enough to form pus. The cells infiltrate the sebaceous glands and hair follicles also ; hence the falling of the hair from loosening of the root-sheath, and the excessive cell-proliferation, which, in the form of a seborrhœa, so often persists after the original disease has gone.

The neighboring vessels may have their walls infiltrated with pus, and suppurative lymphangoitis may be present. The neighboring lymphatic glands are swollen, red and ecchymosed.

As above mentioned, a variety of opinions prevail as to the presence of a specific organism, of an erysipelas micrococcus. Orth and Koch state that they invariably find them in the advancing margin of the disease ; Billroth, Lukowsky and Coats find them sometimes, and sometimes do not ; Hiller denies their existence altogether. They are said to be found in abundance in the lymphatic vessels at the latest points of invasion.

A peculiar condition of the skin is observed in persons who have been the subject of frequent attacks of erysipelas. Some of the round-celled exudation remains, and probably becomes organized (Virchow), and new connective tissue and thickening of the skin or pachydermia result. It is chiefly seen in the cheeks and legs, where this recurrent erysipelas most frequently happens.

Etiology.—Erysipelas is an infectious and contagious disease ; it shows in many respects a marked analogy to the other blood poisons (eruptive fevers, etc.), though the activity of the virus

is not so great as in the case of these latter. It is undoubtedly closely related to the contagium of such diseases as scarlet fever, puerperal fever and septicæmia, for they seem in certain cases to be convertible.

The epidemics of erysipelas which have occurred from time to time in all the larger hospitals have afforded abundant opportunity for the study of the etiological relations of the disease. Outbreaks in St. George's Hospital, London, and in the Edinburgh Hospital have been carefully described by Drs. Baillie and Cullen; and Mr. Erichsen's cases in the University College Hospital are well known. In this last instance, where no case of the disease had been seen for some time, an erysipelatous patient was accidentally kept for two hours in Brundrett (surgical) Ward, and in spite of the most careful disinfection, the disease attacked one after another of the inmates, and proved fatal to several of them. Pujos, Reynaud, and many others recount epidemics that followed the importation of a single case.

It is a well recognized fact that the disease spreads not only by direct, but also by mediate contagion, by fomites. Even the walls and floors of hospital wards and sick bays occasionally become so infiltrated with the poison that the thorough disinfection of the places becomes necessary. In the Charity Hospital of this city the surgical wards, in 1882, were so infected that almost every case contracted the disease; nor did the most radical measures for disinfection possible suffice to stop its ravages. Dry-rubbing and whitewashing of floors, ceilings and walls, with prolonged ventilation, seem to be the best means of destroying the contagium; but they are sometimes insufficient, and, therefore, to-day separate pavilions or light structures, which can be destroyed, are preferred to more permanent edifices for hospital purposes.

An interesting and as yet incompletely answered question is in regard to the relationship between erysipelas and puerperal fever. Erysipelas, as well as the various forms of septic poisoning are undoubtedly capable of producing the disease; and it is almost as certain that the poison of puerperal septicæmia will, in suitable cases, produce erysipelas.

The exciting cause in the form of a contagium is always present; but besides this, various *predisposing* or *contributing* causes are usually spoken of. These are: 1. *Constitutional predisposition*—some patients being much more liable to the disease than others. 2. *Previous attacks*—which undoubtedly render the patient more susceptible than otherwise. 3. *The presence of a lesion*—a punctured or incised wound, or one from chemical or mechanical injuries, or an erosion, or acne pustule, an eczema, in fact any thing that causes retention of pus and decomposition of secretion, etc. This is a prominent factor in the so-called surgical erysipelas. In the new-born child the disease may start from the navel. 4. *Mal-nutrition —bad hygiene* and *intemperance* are of undoubted effect. 5. *Epidemic influences*—during which numbers of persons not usually susceptible, contract the disease. 6. *Special Causes*—affecting certain cases. The same articles of diet, such as mussels or periwinkles, will cause it in some cases, and instances have been recorded where women have attacks every month. Any definite knowledge of the exact nature of the poison of erysipelas is as yet wanting. Many (Hebra, Kaposi, etc.,) hold that the constitutional symptoms are the expression of the infection of the system by the secondary chemical products of the local inflammation, while Cohnheim regards it as a miasmatic contagious disease.

Inoculation experiments have often been made by various observers to determine the nature of the contagious principle, but the results have hardly been of much value. A distinct erysipelas micrococcus has been described by Billroth, and also by Koch, Fehleisen, Huter and Lukowsky, which obtains access through a wound to the lymphatic vessels of the skin and subcutaneous tissue, and spreads along their course. Nevertheless, its presence in many cases cannot be demonstrated, and it is looked upon by very competent observers as a concomitant, not a causative phenomenon. (Geber—Bohn.) One thing only has been proved—that the contagium is a specific substance which obtains access to the body from without.

Some lesion of the skin is therefore a necessary occurrence

in every case of erysipelas, whether it be an open wound, or an insignificant erosion, or even an acne pustule. In this way is to be explained the occurrence of the so-called medical or idiopathic erysipelas ; the poison having obtained access to the lymphatics through a lesion so small as to have escaped the patient's notice. Dental caries, eczema, scrofulous or specific rhinitis, etc., all may occasionally form the nidus for the disease germs.

Diagnosis.—Erysipelas is not a disease likely to be mistaken for any thing else. The presence of a wound, the peculiar infiltration and advancing redness of the skin, the sharp limitation, conjoined with the constitutional symptoms, well distinguish it. Before the rash appears it cannot be diagnosed. Nevertheless, there are some affections which might possibly, under certain circumstances, be mistaken for it.

Erythema simplex and urticaria itch severely, do not progress by contiguity, are not usually single, and do not have the distinct border and the general inflammatory symptoms. The limited extent of erysipelas, and its usual connection with an injury, will serve to differentiate it from the exanthemata.

It is said that malignant small-pox may at first be mistaken for it, but the greater severity of all the constitutional symptoms, and the extent of the eruption in small-pox, must suffice to prevent error.

A periostitis of the tibia especially, may closely resemble an erysipelas, but the history of the case, the pain, the shining skin and the kind of margin will generally enable one to make the diagnosis.

Prognosis.—The prognosis varies much in accordance with the severity of the disease and the constitution of the patient. In general, it is good ; in persons whose health has not been undermined by excesses, who are not alcoholics or the subjects of chronic Bright's disease, the chances of recovery from simple cutaneous erysipelas are very good indeed. Yet it is "a dangerous and deceitful disease," especially when affecting persons at the extremes of life, or in the puerperal state, or when suffering from extensive injuries.

The mortality is usually set down at from ten to fifteen per cent. Sometimes it is considerably greater, especially when it occurs in epidemic form. Thus Billroth records an invasion of the disease wherein he lost nearly twenty per cent. of his cases. On the other hand, Alvan Beck records a set of cases from the University College Hospital with a mortality of only four per cent. The amount of the fever, delirium and diarrhœa; the occurrence of prostration and the so-called typhoid symptoms, and especially the appearance of complications, these, rather than the extent or location of the eruption will afford us the materials for prognosis. If the disease affects the pharynx, the possibility of the occurrence of œdema glottidis is to be borne in mind.

E. faciei is, it is true, liable to meningeal complications; but in most cases the prognosis is food.

Where there is contracted kidney, the prognosis is almost hopeless.

In children it is a very fatal disease if occurring during the first few weeks or even months of life, and many of these cases die very quickly when to all appearance the eruption is rapidly subsiding.

Treatment.—Must be both constitutional and local.

1. *Constitutional treatment.*—Being essentially a disease of depression, no one nowadays recommends for erysipelas the antiphlogistic modes of treatment—bloodletting and blistering—formerly in vogue. (Sydenham). On the contrary, every means of sustaining the patient's strength should be employed, nourishing diet—beef tea, eggs, milk, wines, etc. The bowels are to be kept free, perhaps best by a full dose of calomel, followed by salines. Sleep must be procured, if necessary, by opiates; chloral is less liable to disagree than opium itself, though Bryant warns us to be cautious in our use of hypnotics in this disease. If the temperature is high, quinia, or salicylic acid must be used, though ice-bags may be preferable if the stomach is irritable. Tincture of the chloride of iron is very generally employed, and does seem, as Dr. Reynolds claims, to have something of a specific action. It must be

given freely, from twenty to sixty minims every two to three hours.

2. *Local treatment.*—A great variety of local remedies have been recommended at various times, but they have hardly stood the test of experience. Cold, in the form of ice-bags, may be employed, but, since it does not affect the course of the disease, it is only to be used in so far as it is agreeable to the patient's feelings. It lessens the local heat and tension, but, if there is much infiltration, it may, by still further interfering with the circulation, tend to produce gangrene. It should, therefore, not be used continuously. Dry heat, by means of cotton, wool, etc., is often very grateful; poultices are too irritating. The various indifferent applications, simple ointments, flour and starch, are not to be recommended; they retain the secretions, and act as irritants. The use of tincture of iodine or collodion, as well as the attempt to hinder the progress of the disease by drawing a line around it with nitrate of silver or blistering fluid is not to be recommended.

A simple lead-water, or better, the ordinary lead and opium wash, used hot, lukewarm or cold, as most agreeable to the patient, are the commonest and best of our local applications. Belladonna, equal parts of the extract and glycerine, form a very useful topical sedative.

In accordance with our later ideas of the probable dependence of erysipelas on a living contagium, various applications destined to destroy it have been recommended, as tar or oil of turpentine, the subcutaneous injection of a one-half per cent. of carbolic acid, salicylic acid. None of them have justified the hopes at first entertained.

Probably the best results are to be obtained by a rational general treatment, (good food and pure air) with tincture of the chloride of iron internally, and lead and opium, or a lead wash, or the belladonna paint locally.

If erysipelas invades the pharynx, the possibility of a sudden necessity for scarification or tracheotomy must be borne in mind.

Above all, the various measures to prevent the recurrence and spread of the disease must not be lost sight of. Free drainage must be secured for wounds; local collections of pus must be well opened. E. faciei occurs often from dental caries, or from imprisonment of pus under the crusts of a chronic rhinitis, or from acne pustules. Future attacks of the disease may be prevented by due attention to these points.

Patients suffering from erysipelas should be isolated, and especially separated from surgical cases or puerperal women. It is hardly needful to recall the importance of thorough disinfection of hands and instruments to the attendants. It is improper to attend midwifery cases whilst in charge of a patient with erysipelas.

SYPHILIS.

I have placed syphilis among the acute contagious inflammatory diseases, on account of its similarity in many respects to the ordinary exanthematous affections. In the majority of works on dermatology it is classed with the new growths, but a study of the tissue changes in syphilis show that the process is inflammatory in nature. This is not the place to describe the various forms of chancre, or to discuss the unity or duality theory in reference to them. The conditions in this disease which especially interest the dermatologist, are its cutaneous manifestations, the so-called syphilides or syphilodermata. As regards form the syphilides do not differ from forms met with in other cutaneous diseases, and may appear as macules, papules, vesicles, blebs, pustules or tubercles. In any given case they take their name from the form of the primary cutaneous lesion, thus, if the syphilitic eruption makes its appearance as a macule, it is called a macular syphilide, and if it appears as a papule it is called a papular syphilide, and so on. The character of the general syphilis which follows a chancre, depends greatly upon the constitution and state of general nutrition of the person affected, and upon the surrounding hygienic conditions.

Scrofulous and badly nourished persons suffer more than

those who are robust and well nourished. Bad hygienic surroundings aggravate the disease and interfere with treatment. If the first cutaneous manifestations appear at a period much later than usual after the first formation of the primary sore, the probabilities are that the disease will be mild, provided the nutrition and hygienic conditions are good. So also, if the first syphilide is macular or papular in form, the case will be milder than if it was vesicular or bullous. Either a mild or severe case of syphilis may follow both an ulcerating and non-ulcerating chancre. The potency of syphilitic virus is the same whether derived from a primary or from a secondary lesion.

Before describing the different forms of cutaneous syphilis, we will notice certain general characteristics peculiar to all of them, and which are of service in forming a diagnosis.

1. *Seat of the eruption.*—The earlier eruptions generally occur over the whole body; they are superficial in character, and tend to symmetrical arrangement, that is, to be distributed in a similar manner on both sides of the body. The cause of this general distribution and symmetrical arrangement is, that at this stage the virus exists every where in the body; in other words it is a disease of the general system: a blood and tissue disease. Remote secondary eruptions, and those of the tertiary period may be more or general, but are not symmetrical in arrangement, the lesions are deeper seated in the skin, and they cause destruction of the tissue, as shown by the atrophy or ulceration produced. The conditions which usually cause ulceration of the skin are epithelioma, lupus, lepra, simple non-contagious inflammation, as in the so-called varicose ulcer, and syphilis. All except the last one have rather special seats for development, whereas syphilis may appear upon any part of the body. If, therefore, we find cicatrices, especially with rounded margins upon the body or arms in a case without a history of injury, the probabilities are that syphilis was the cause.

2. *Color.*—The color varies with the form of eruption, its age and the rapidity of development of the lesion. The large papular syphilide is darker in color than the small papular or the macular form. All of the lesions become darker with age.

The more acute the development the brighter the color. Usually the color is not the bright red of ordinary dermatitis, but is of a dull brown or raw-ham appearance. The raw-ham-like color is supposed to be characteristic of the syphilides, but it is not always present, and is met with also in other eruptions, as rosaceous acne and lichen planus. In the macular form this coppery color is not present. In the small papular form it is also generally absent, but is well marked in the large papular and tubercular forms. When present, this coppery color is always significant. The surrounding skin may show increased pigmentation.

3. *Polymorphism.*—The tendency to exhibit several forms of eruption at the same time is especially characteristic of the earlier syphilides, but is met with in the later eruptions also. Macules, large and small papules and vesicles, are often seen in the same case. So also papules, tubercles, pustules, vesico-pustules and ulcers may be present at the same time. Thus it happens that one portion of a syphilitic eruption may so far resemble other cutaneous affections as to render the diagnosis difficult, whilst another part will exhibit characteristic lesions. This fact should never be forgotten in obscure cases. The different forms of lesion also show a tendency in their course to become changed into other forms. The small papule may assume the large papular form, and the latter in turn may become pustular.

4. *Configuration.*—The earliest lesions are generally rounded in form, whilst the later eruptions have a great tendency to assume a linear, circular, semi-circular, crescentic, or serpiginous form. In the ulcerating syphilide the ulcer is at first round, but afterward serpiginous or horse-shoe in shape. The cause of this will be stated further on. The base is always irregular and ashen-gray in color, the edges are sharply cut or undermined, the margin invariably infiltrated by sharply limited syphilitic tissue and the surrounding skin usually normal in appearance. The crusts are thick, greenish, or black in color, adherent, and, if the ulcer is deep, laminated.

5. *Scales.*—The scales are always few and firmly adherent.

They are most abundant in the papulo-squamous form. In the later eruptions they are present only after the lesion has existed some time.

6. *Subjective Symptoms.*—Itching and burning are rarely present. In the maculo-papular form ; in pustules situated on the scalp or hairy part of face, and in papules on the scrotum, itching is often present. Friction, sweat, and heat will cause itching. Tubercles, just before undergoing ulceration, and ulcers, especially on the extremities, or in connection with bones and nodes, are accompanied by pain.

7. *Course.*—The syphilides develop slowly and run a protracted course. They show a great tendency to recur after removal. An ulcerative syphilide spreads more rapidly than lupus or epithelioma, but slower, as a rule, than the simple inflammatory ulcer (varicose ulcer).

Although not one of the above described characteristics can be regarded as peculiar to the syphilides, since all are found in other cutaneous affections, yet, taken together, they are of great value in forming a diagnosis. In all doubtful cases, however, our reliance must be upon a knowledge of the peculiarities of the syphilides as resulting from the pathologico-anatomical course of a single lesion. Syphilitic productions in the skin have three characteristic features :

First—They consist, in every case, except in the macular form, of a dense, sharply limited round cell infiltration into the upper part of the corium and corresponding papillæ.

Second—The cells comprising the infiltration are not capable of higher organization, as, for instance, the formation of connective tissue; but always, after a longer or shorter period, undergo retrograde changes and disappear either by fatty degeneration and absorption, or by ulcerative degeneration.

Third—The extension of the infiltration and the retrograde changes always take place in a centrifugal manner. The peripheral portion of a syphilitic eruption is therefore always the youngest, and possesses the character of a recent infiltration, as described above, while the central part is the oldest, and is the first to undergo retrograde changes.

Upon these three features depend all the symptoms of the syphilides. Take, as an example, a syphilitic papule as the representative lesion.

First—A perpendicular section of a papule shows that it is composed of a dense cell infiltration of the upper part of corium and papillæ above, and that this infiltration is sharply limited at the sides—that is, ceases abruptly against normal tissue. On this account the papule is elevated ; it has sharply limited margins ; it is firm to the feel from the density of the infiltration ; the surface shines because the epidermis is stretched over the infiltration ; it is dark red, from transudation of hæmoglobin from the compressed bloodvessels. If all of the above symptoms are not present, then the lesion is not syphilitic—at least, is not a recent syphilitic papule.

After a time, retrograde changes occur in the infiltration, and it finally disappears by absorption, the oldest portion, that is, the most central part, disappearing first. The central part becomes depressed, the epidermis sinks in and becomes first wrinkled and afterward scaly, whilst the peripheral part of the papule still retains its original character. If the eruption spreads peripherically there will always be a retrograding portion occurring in the spreading infiltration, but as the cells retain their vitality for some time, there will always be an external zone of dense, shining, dark red, sharply limited infiltration.

Instead of disappearing by fatty degeneration and subsequent absorption the infiltration may undergo purulent degeneration, and ulceration occur. The purulent secretion then dries to crusts, the size of which will depend upon the extent of the ulceration. The situation of the crusts will correspond with that of the fatty degenerated part in the previous mode of degeneration. They are always surrounded by a zone of unchanged infiltration like an ordinary papule. After the syphilitic infiltration has acquired a certain size by peripheral growth it no longer continues to spread further equally in all directions, but ceases to extend at one part of the ring, whilst at the remaining portion it continues to spread. As the degeneration

and subsequent atrophy or circatrization process continues to follow the infiltration, the eruption or ulceration gradually changes from the rounded to a horse-shoe form. If the extension takes place from only one-third or one-quarter of the ring, the ulcer will after a time assume the horse-shoe shape.

The laminated character of the crusts of rupia syphilitica arise in the following manner. The centre of a tubercle breaks down, ulcerates and the secretion dries to a crust. The infiltration upon which the crust sits also breaks down in its turn, and dries to a second and larger crust beneath the first, which thus becomes elevated. As the ulcerative process continues to spread peripherically, as in other syphilitic forms, new crusts continue to be formed beneath and around the previous crusts. In this manner the oyster shell form of crust is formed. (See Fig. 27). Outside the crust there is always a zone of recent undegenerated infiltration, that is, there is a zone of sharply limited, dense, dark red infiltration.

I am indebted to the above described mode of arriving at a clear idea of the syphilitic lesions to Kaposi, from whose clinics I first learned the mode of making the diagnosis.

We will now describe the different forms of syphilides.

MACULAR SYPHILIDE.

Syn.—Erythematous Syphilide ; Roseola Syphilitica ; Exanthematous Syphilide.

Symptoms.—This is the first eruption which arises after the syphilitic virus has entered the system, and shows itself usually in from six to eight weeks after the first appearance of the primary lesion, although it may not appear for several months or even more than one year. It consists of a more or less general eruption of macules of various sizes and shapes. They are from a lentil to finger-nail in size, of irregular, round or oval shape, with a rather ill-defined outline, and either on a level or very slightly elevated above the general surface. Sometimes the spots are so indistinct that they only give a mottling appearance to the part. If the individual is stripped and exposed to a low temperature, the maculæ become much more distinct and

more sharply defined. Sometimes a small papular elevation is present in the centre of a macule—erythema syphiliticum papulatum. The color depends upon the condition of the individual, the extent of hyperæmia present, and the age of the eruption. The darker the person, the darker red will be the eruption. So also, the greater the hyperæmia and the older the patch, the darker will be the color. At first it is of a pale red, which disappears upon pressure; but later becomes darker and does not disappear upon pressure. As it fades away it assumes a dirty-yellow, coppery, or grayish brown color. The number present varies in different cases; they may be few or very numerous. They appear usually first around the umbilicus, and afterward extend to the trunk, and the rest of the body. They are most numerous on the trunk and flexor surfaces of the extremities, and are rare on the back of the hands and face. The eruption is sometimes ushered in by fever and a feeling of *malaise*, but may arise without any fever symptoms. Itching is rarely present, except the macules form rapidly and are elevated. It is often accompanied by pains in the joints and tibia, or sternal region; by loss of hair and an erythematous condition of the fauces. The course of the eruption is usually very slow; a patch requires usually about a week to arrive at its height, and then it remains unchanged as regards extent for weeks or months, depending on the intensity of the case and the mode of treatment. The spots do not coalesce unless the eruption is very profuse. They have no tendency to form rings like the papular syphilide. They disappear usually without desquamation, leaving behind pigmented places which afterward become normal. If the macules are elevated, or are of the papular form, there will be slight desquamation. Relapses of this form of syphilide may occur during the first year, and then as large macular or annular patches, and often mixed with papules.

Diagnosis.—The macular syphilide may be confounded with measles, roseola, simple erythema, urticaria, tinea versicolor or with some medicinal eruptions. In measles, the catarrhal condition, the fever, the form of eruption, its situation and the ef-

fects of cold in making it more indistinct, are sufficient for the diagnosis. In roseola, the patches form quickly and change form rapidly. In urticaria, there are wheals ; they arise quickly, are of short duration and itch greatly. In tinea versicolor, the patches increase by peripheral growth ; they may be from a pin-head to several inches in diameter, and, upon scratching with the finger-nail, abundant scales are raised which contain numerous fungous elements. Medicinal rashes are diagnosed by the history of the case, the fever, the form and duration of the eruption.

PIGMENTARY SYPHILIDE.

This is a rare condition, and consists of rounded or irregularly-shaped and ill-defined macules of a pale grayish or dirty brown color, not elevated above the level of the skin, and not disappearing upon pressure. They are either discrete or confluent, and are found almost exclusively upon the neck on one or both sides, but may arise also upon the trunk or extremities. They appear during the first or second year of the disease, and are met with generally in women, the eruption being very rare in men. The course of the disease is very slow, lasting several months or two or three years, and is said to be not amenable to anti-syphilitic treatment. In the only well-marked case which I have observed, the eruption rapidly disappeared during the use of a mercurial internally. The eruption resembles considerably chloasma and tinea versicolor. Chloasma occurs as large patches of increased pigmentation, and not as small maculæ. It is rarely symmetrical, and is usually present on the forehead or temples, and not upon the neck. In tinea versicolor the fawn-colored patches with their abundance of scales as shown by scratching the surface, and the situation as a rule upon the anterior surface of the thorax, is sufficient for the diagnosis.

PAPULAR SYPHILIDE.

The papular syphilide appears as a more or less general eruption of small or large acuminated or flat papules. The

small and large papular eruption require a separate description.

SMALL PAPULAR SYPHILIDE.

Syn.—Miliary papular syphilide ; Lichen syphiliticus.

This eruption usually makes its appearance in from two to three months after the commencement of the primary lesion, and may be the first manifestation of general syphilis, or may develop from or after the macular form. It is more or less general over the body, and the papules show a great inclination to arrange themselves in groups or lines, a dozen or more papules forming a group. It commences as small red points, which soon become pin-head sized, elevated, firm papules ; or if they form rapidly, as especially if seated in a hair follicle, there may be a small collection of serum in the apex, which afterward may become opaque and form a miliary pustule. In shape they are round and acuminated, and are covered by a very few scales, or, in the case of the miliary vesicles or pustules, by a little crust. In color they are at first of a bright red, and later become of a dark or brown red. The eruption is generally symmetrical, and situated especially upon the face, shoulders and arms. It is either an early or late manifestation, although generally the former. It is very chronic in its course, and is liable to recur. When it does recur, the eruption is less profuse, and occurs more on the flexures of the joints and about the angles of the mouth. The first outbreak is usually accompanied by fever. Itching is usually absent. The papule disappears by fatty degeneration, leaving behind pigmentation and slight atrophy of the part.

The eruption is to be diagnosed from lichen ruber, psoriasis punctata, papular eczema, keratosis pilaris and lichen scrofulosus. The extent of the eruption, the color, the grouping and the pathologico-anatomical course of the papules render the diagnosis easy. In keratosis pilaris the papules are pale in color, are not so firm, are not grouped, and the scaling is much greater. The papules in lichen scrofulosus are small, have a tendency to group and are situated around hair follicles, but

they are found especially upon the trunk; are reddish or yellowish in color, flat, and scale considerably. They are met with only in scrofulous persons, and in these especially about the age of puberty. Psoriasis is known by the amount of scaling, the oozing upon scratching and the presence of patches, which are extending by peripheral growth. Lichen ruber is known by the definite size of the papules and the mode of spreading of the eruption. Papular eczema itches, the eruption is not general, the papules are not grouped, and generally soon become vesicles. There is also exudation on the free surface, a coalescence of the papules or vesicles, and the formation of crusts or scales.

LARGE PAPULAR SYPHILIDE.

The lesions of this eruption differ in size, shape and color from those of the small papular syphilide. They vary in size from that of a split pea to that of a finger-nail, are circular or oval in shape, elevated above the level of the skin, sharply limited externally, firm in consistence, and with a flat, non-scaling, smooth, shining surface. The color at first may be pale red, but soon becomes dark or brownish red, and often is of the raw-ham appearance. It is in this and the tubercular form that the coppery color has been seen. The number of papules present in a given case depends, as a rule, upon the length of time that has elapsed since the first appearance of the primary lesion; that is, whether the eruption is a recent or a late manifestation of the syphilis. As the extent of the blood poisoning diminishes with the age of syphilis infection, so the more recent the manifestation the more general and more symmetrical will be the eruption, and the later it appears the less general and the more regional, that is, confined to certain regions or parts of the body. As it is a later manifestation as a rule than the small papular eruption, so also the number of lesions is generally less. It may appear upon any part of the body and the papules may be either disseminated or grouped. In recent eruptions they are more disseminated, and in later outbreaks they tend to arrange themselves in groups to form

patches. They are met with especially upon the forehead and the angles of the mouth, on the back, the flexor surface of the extremities, the scrotum, groin, genitalia and around the anus. The papules arise slowly, may increase in size by peripheral growth in the manner previously described, remain weeks or months as fully developed papules and finally disappear by fatty degeneration and subsequent absorption of the infiltration, leaving behind an atrophied spot which at first is pigmented and afterwards white ; or during their degeneration there may be excoriation and slight ulceration. The eruption is very liable to recur again and again, each subsequent outbreak showing a tendency to regional distribution and grouping of the lesions.

As modifications of the large papular syphilide we have to consider the moist papule and the papulo-squamous form of eruption.

Moist Papule.—(Mucous patches, condylomata). The moist papule is peculiar to syphilis. It is derived from the ordinary papule and is met with about all mucous orifices, as the mouth, throat, anus ; or where opposing surfaces of skin come in contact, as in the axilla, beneath the mammæ in women with large breasts, in the perinæum, groins, on the scrotum, genitalia, between the toes and at the umbilicus. They arise especially easily on the tender skin of infants in the regions named. In size they vary from a pinhead to a finger-nail or even larger by coalescence of two or more papules. They are generally elevated, but may be flat or even depressed. Their outline is not so well defined as the dry papule, and they are softer in consistence. Their surface is moist and covered with a mucoid secretion which may dry to a thin scab. The surface may take on hypertrophic action and form a vegetating, warty or papillary growth, the so-called vegetating syphilide. These are always elevated, circumscribed, and present a warty appearance. They are met with especially on the scalp and genitalia, and grow very rapidly. If the parts which are the seat of moist papules, especially the perineal and genital, are not kept cleanly the secretion becomes decomposed, has an offensive odor and irritates the

surrounding skin, producing dermatitis, which in its turn may give rise to more or less simple inflammatory, warty growths. The patches themselves may ulcerate and become painful.

Mucous patches of the mouth are more irregular in shape, are flat, perhaps depressed, and may vegetate or ulcerate. At the angles of the lips they are generally deeply fissured, the fissure being single and horizontal in direction. The secretion from mucous patches is as contagious as that from the primary lesion. The moist papule may develop upon a primary chancre, hence may represent either a primary or a secondary lesion. If situated at the angle of the mouth or on the nipple of a nurse it may be impossible to say whether it is a primary or secondary lesion.

Papulo-squamous Syphilide.—Both the small and large papular syphilitic lesions show slight desquamation during the absorption stage, but in the papulo-squamous lesion the scaling is much greater and is a prominent symptom. The eruption is rarely extensive, being generally more regional, and the lesions are either disseminated or grouped. In size they correspond to the large papular syphilide above described, are elevated, with flattened surface, which is covered with a greater or less number of grayish, dry, fine, non-imbricated, somewhat adherent scales. They extend by peripheral growth and show a tendency to form lines or circles, or patches of considerable size. The eruption is usually symmetrical, and although it may occur upon any part of the body it is most frequently met with upon the palms of the hands and soles of the feet, forming the so-called palmar and plantar syphilide. Here, on account of the great thickness of the corneous layer, we miss the marked elevation of the papule as occurs on parts with a thin epidermis. If the papule has attained the ordinary size close inspection will show some elevation and a sharp outline. They tend to coalesce, and by peripheral growth form roundish, serpiginous or irregular patches. At the margin of these patches there is always to be seen a seam of dark red infiltration. If the patch is small it is covered by thin, grayish, adherent scales. If it has acquired some extent the scales are generally present only

at the margin, and here they are semi-detached, the inner part being free. Sometimes a large patch is covered with scales, presenting an appearance much like that seen in some cases of squamous eczema in this region. Removal of the scales shows a dark red skin beneath. Fissures sometimes form. The eruption rarely spreads to the wrists or to the back of the hands, or upper surface of the feet. It is very chronic in its course, lasting months or years, and is a symptom of either recent or late syphilis. It is frequently combined with other forms of the syphilides. As it disappears the color fades, the scaling becomes less, and finally the part becomes normal. Itching is rarely present.

Diagnosis.—The large papular syphilide may be confounded with acne, lichen planus, and psoriasis. In acne the eruption is confined to the face and throat, the papules form rapidly, are brighter red in color, the redness disappearing greatly upon pressure, they are acuminated, are not arranged in groups, frequently become pustular in a few days and finally disappear after a short existence. The history of the case and the presence of comedones will also assist in the diagnosis. Lichen planus occurs especially upon the forearms and legs, the papules are angular in outline, rise abruptly from the normal skin, are but slightly elevated above the general surface, and have a smooth shining surface which is frequently depressed in the centre—umbilicated. The umbilicated appearance and angular outline are of most value in the diagnosis, as in the size of the papules, their color and the tendency to form groups they resemble the papular syphilide. In psoriasis the papule is made up of scales and not of an infiltration in the corium ; the scales are numerous, laminated, of a bright white or mother-of-pearl color, easily removed, and scratching of the rete beneath is followed by oozing of blood. In syphilis the papule consists of an infiltration; at first there is no scaling, subsequently a few grayish, firmly adherent scales are present, and scratching of the skin beneath is not followed by oozing of blood. In psoriasis the color is pale or rose red and mostly disappears upon pressure ; in syphilis the color is soon dark red and persistent, not

disappearing upon pressure. The other points will be considered in the diagnosis of the palmar syphilide.

Mucous patches or moist papules are to be diagnosed from the simple inflammatory or non-venereal papillary new-formations called *vegetations*. These owe their origin to irritation of the skin from acrid secretions and uncleanliness, and are found especially just behind the corona glandis but also at the orifice of the urethra, on the scrotum and around the anus. They are papillomatous growths, are very vascular, warty in appearance and composed chiefly of epithelium. They are usually pedunculated and generally multiply.

The palmar and plantar squamous syphilide is often confounded with squamous eczema of the palms and perhaps also with psoriasis. In eczema there is generally a history of heat, burning and discharge which is absent in syphilis. Eczema does not consist of papules arranged in circles and spreading peripherally with a sharply limited margin as frequently occurs in syphilis. In eczema the patches are irregular in shape, the margin gradually passes into healthy skin beyond, there is an entire absence of the sharply limited, dark red infiltrated seam at the periphery as in syphilis; the patch itself shows evidence of present or past vesicles as a rule ; there is more or less general infiltration of the affected skin; fissures are generally present from loss of elasticity of the skin due to this inflammatory infiltration, and the eruption shows great tendency to extend to the sides or backs of the fingers in the form of a vesicular or papular eczema. Finally eczema itches very much and syphilis none. Psoriasis of the palms is a very rare affection at all times and probably never occurs on the palms or soles without being present on other parts of the body ; hence the diagnosis cannot be difficult. When seated on the palms the spots or patches could be diagnosed by the following characters. In psoriasis the spots are made up of scales, which are easily detached and upon removal show a bright red rete beneath. In syphilis the spots are formed by an infiltration in the corium and removal of the scales shows a dark red infiltrated base. The scales in psoriasis are numerous, in lamellar arrangement, easily de-

tached; in syphilis they are few, are fine, not imbricated and semi-detached on spreading patches. Psoriasis patches form rapidly, syphilitic form slowly. Besides these local differences psoriasis is seen especially on the elbows and knees and syphilis rarely there. Psoriasis maintains its characteristic form wherever situated, syphilis is polymorphous, and a palmar syphilide is usually associated with other symptoms of syphilis on other parts of the body.

VESICULAR SYPHILIDE.

This is a very rare manifestation of syphilis and occurs within six months of the primary infection. The vesicles may be small and grouped like in eczema, hence the term syphilitic eczema as sometimes employed; or large and isolated as in varicella. (syphilitic varicella). In the first form the vesicles are pin-head sized, acuminated, elevated, and usually grouped, being situated upon a dark red base, or, if isolated surrounded by a dark areola. They are situated especially around hair follicles. The vesicles may become pustules, or the contents may dry up and desquamation occur, or the vesicles may break down and dry to thin scabs which slowly separate, leaving pigmentation but not scars. They are met with on the face, extremities and body, and are liable to recur. The large vesicular syphilide consists of vesicles the size of a split pea, elevated, roundish, somewhat umbilicated, with a red areola and clear or cloudy contents. The vesicles are either grouped or disseminated and either become pustules or dry up and be succeeded by greenish brown crusts which are slowly cast off and leave no scars. Sometimes the vesicles are arranged in circles like in herpes. The eruption is rarely extensive or the lesions numerous and it is usually associated with other forms of the syphilides.

Diagnosis.—The small vesicular syphilide may be mistaken for eczema. In the latter the vesicles form quickly, are ephemeral, soon bursting, are not seated upon a dark red base, itch very much and cause general or confluent crusting. The large syphilide may resemble the eruption of varioloid, but the slow formation of the vesico-pustules, their chronic course, the

absence, as a rule, of fever, the dark areola and the concomitant syphilitic lesions are sufficient for the diagnosis.

The pustular syphilide is a rarer manifestation of syphilis than either the macular or papular form. It may appear either early or late in the disease, and is usually met with in persons suffering from improper nourishment or with "broken down" constitutions. The lesions may be few or numerous, general or localized, disseminated or grouped, and situated around hair follicles and sebaceous glands or beneath the epidermis. They may arise rapidly or slowly and proceed from papules or vesicles, or arise primarily as pustules. In size they vary from a millet seed to an inch or more in diameter, and are acuminated or rounded, or flat, on the surface ; circular, ovalish or irregular in outline, and seated upon an indurated or slightly reddened base, and surrounded by a larger or smaller areola. The large pustules have a tendency to crust early. The crusts are acuminated, flat or raised, thick or thin, soft and friable ; or hard, laminated, more or less adherent, and from a yellow brown to black. An ulcer is always present beneath the crusts. The ulcer is superficial or deep ; the base uneven and covered with a grayish, yellowish or greenish purulent secretion ; the edges are sharply defined and surrounded by more or less dark-red infiltrated tissue. Cicatrices always result, their character depending upon the extent and depth of the ulceration. Pustular syphilides are often associated with syphilitic lesions of the eyes, bones, testicles and matrix of the nails.

The pustular syphilides may be divided into the small acuminated, the large acuminated, the small flat and the large flat pustular syphilide.

The small acuminated pustular syphilide.—This form has its seat at the hair follicles, and consists of pin-head sized, acuminated, raised papules with a reddish base and a small amount of pus in the apex. A hair is frequently present in the centre of the pustule. The pus soon dries to a scab, which afterward desquamates, leaving a slight depression and some pigmentation. The lesions are generally numerous and spread over large areas or confined to certain regions. They are most

frequently met with on the extremities, chest and back. They are either isolated or confluent and grouped or irregularly distributed. It is either an early or a late symptom, and may recur a number of times. Other syphilitic lesions, as papules or miliary vesicles, are generally present at the same time.

Large Acuminated Pustular Syphilide.—This form has the same seat as the small acuminated lesion, that is it is seated around a hair follicle or sebaceous gland, and consists of split pea-sized, acuminated pustules seated on a red or copper-colored base. The lesions may form rapidly or slowly, pus collecting on the papules to its full development in twenty-four or forty-eight hours, or not before one or two weeks. The base is at first red and afterward dark-brownish or copper colored. The pus dries to yellowish or brownish, thick or thin, adherent crusts, beneath which there is ulceration. The crusts disappear by desquamation and the ulcers heal by cicatricial tissue. A single pustule lasts about two weeks. The lesions are generally few in number and are disseminated or grouped. The more chronic the course of the pustule formation the fewer are the lesions present. They are seated especially upon the scalp, face and shoulders, but may appear on other parts of the body. It is an early manifestation, but seldom occurs before the sixth month after infection, and lasts about three or four months; but may be prolonged by the successive formation of new pustules. Other lesions, as papules, are generally present at the same time. If many pustules form simultaneously there may be considerable general symptoms, as fever, etc., but usually these are absent.

Diagnosis.—The eruption may resemble acne or variola. In acne the eruption is usually confined to the face and shoulders, the lesions are not grouped, they form more rapidly, they have no copper-colored base or areola, the eruption is chronic in its course and the concomitant symptoms of syphilis are wanting. In variola the intensity of the general symptoms, the situation and extent of the eruption, the umbilicated pustules, and the definite duration of the disease are sufficient for the diagnosis.

Small Flat Pustular Syphilide (Impetigo syphilitica).—This form of eruption consists in the formation of small, flat pustules, situated on a reddish base, the pus drying and forming crusts of various colors and thickness. The pustules are either superficial or deep. In the superficial form, which is an early manifestation of syphilis, the pustules are grouped into an irregularly shaped patch which soon crusts. The crusts are yellowish or brownish in color, dry, laminated, friable, and somewhat adherent. They are surrounded or not by a red areola, and beneath them is a superficial ulceration which heals by cicatrization.

In the deep form, which is a late symptom of syphilis and occurs especially in cachectic persons, the pustules are situated on an elevated reddened patch, and they dry to dark green or brownish, thick, uneven crusts, beneath which is a deep ulcer with a grayish, dirty secretion, sharp cut edges and an indurated base. After a time the crust falls off and the ulcer heals by cicatrization, or the ulceration may spread and form large irregular ulcers.

The small flat pustular syphilide is usually met with on the face, scalp, genitals and extremities. It is often accompanied by fever and associated with periosteal pains, and headache, which are most severe at night.

Diagnosis.—It is to be diagnosed from pustular eczema. In the latter there is no ulceration, no hard infiltration, the crusts are lighter colored and seated on a discharging, non-ulcerated base.

Large flat pustular syphilide (Ecthyma syphiliticum.)

This form consists of large, flat, isolated pustules, situated upon a red base, and containing purulent or even bloody contents, which dry to form adherent crusts or scales of various color and thickness. They are always seated upon ulcers.

The eruption is generally a late manifestation and the pustules are few in number, isolated and unsymmetrical. It is met with in cachectic and badly nourished subjects. There are two forms, the superficial and deep, according to the kind of ulceration present. The superficial form of the lesion

arises upon a small reddened patch ; they are from a pea to an inch in diameter, rounded, disseminated or grouped, often umbilicated and are surrounded by a red areola. The pustules burst and dry to an uneven, thick, brownish or blackish crust beneath which there is supeficial ulceration. In the deep form, pus forms on dark red elevated nodules which dries to thick, uneven brownish or blackish crusts often formed like oyster shells (rupia.) Beneath the crusts there are deep ulcers with a grayish, dirty, indurated base, steep edges, and a red areola. The ulceration may heal by cicatrization or spread peripherally and produce serpiginous or kidney shaped ulcers. Upon healing there is generally pigmentation around the cicatrix.

The cicatrix in this form of syphilis depends on the depth and extent of the ulceration. The eruption appears especially upon the scalp and lower extremities. The mucous membranes are also frequently affected, there are deep ulcers on the tonsils and soft palate, and small aphthous ulcers in the mouth and gummata in the skin. The eruption is frequently associated with fever resulting from inflammatory processes in the bones.

Diagnosis.—From ordinary inflammatory ecthyma the eruption is diagnosed by the history of the case, the presence of other syphilitic lesions, the red, copper-colored areola, the deep ulcer, the kind of crust present, and the increase in size of the ulcer by peripheral spreading.

Bullous Syphilide (Pemphigus Syphiliticus.)—This form consists in the formation of pea to walnut size, rounded or ovalish, more or less tense blebs containing an opaque liquid which soon becomes purulent or bloody. Sometimes the eruption resembles pustules more than blebs. The blebs are situated upon an infiltrated base and surrounded by a red areola which deepens in color with the duration of the lesion. They rupture early and the contents dry to dark brown, deep green or blackish crusts. The latter vary in character according to the depth and breadth of the ulcer which produces them. They may be small, flat and thin ; or large, conical and thick ; and are usually very adherent. Beneath the crusts there are ulcers with a greenish-yellow,

dirty grayish secretion, sharp edges and an infiltrated base. These ulcers have a great tendency to spread peripherically and form round or serpiginous ulcers like a tubercular syphilide. If the ulcer spreads at the periphery crusts will constantly be formed corresponding in circumference with the extent of the ulceration ; and as the successively formed crusts will consequently be beneath and at the same time larger than the previously formed ones they will, when united, form a conical mass arranged in layers and resembling an oyster shell in appearance. As the ulceration does not as a rule spread equally in all directions, the first formed crust, representing the apex of the mass, will be gradually removed from the centre towards the margin. If, however, the ulcer spreads equally in all directions, the crust will be conical in form and the crust first formed and constituting the apex will be over the centre of the whole mass, as is

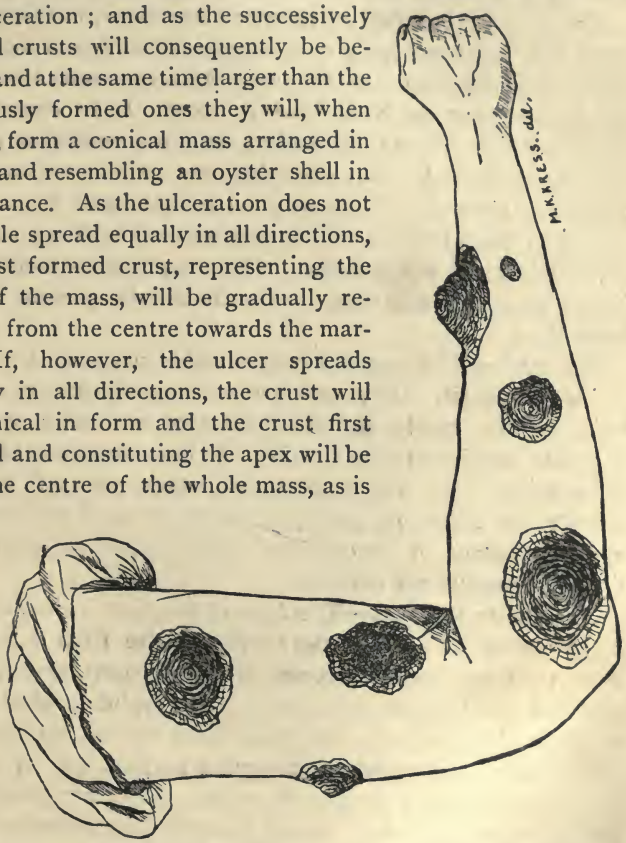


FIG. 27.—Rupia syphilitica showing the mode of formation of the oyster-shell-like crusts ; near the wrists the early stage of the disease is observed.

seen in Fig. 27, which is diagrammatic and partly copied from plate XL of the Sydenham Society Atlas.

These rupia or oyster-shell-like crusts may arise in con-

nection with a small or large pustular, a bullous or a tubercular syphilide, the real mode of formation being the same in all cases. The ulcers heal by cicatricial tissue, the scar being generally smooth, at first red and afterwards white, and sometimes crossed by bloodvessels.

The eruption is either an early or a late lesion, and hence appears either symmetrically or non-symmetrically upon the body. Its favorite situation is on the extremities, especially the lower, but it appears on the back, head or breast. In its course it is either acute or chronic, depending upon the condition of the individual affected. It is most frequent in ill-nourished and cachectic persons. If the eruption is acute and the number of blebs considerable, it will be accompanied by fever, etc., but in chronic cases this is absent. Other syphilitic lesions of the bones, mucous membranes, or skin are usually present at the same time.

Diagnosis.—The eruption may resemble pemphigus vulgaris or lupus vulgaris. In pemphigus vulgaris the history of the case, the thin crusts, and the absence of ulceration serve to diagnose the disease from syphilis. In lupus the easily bleeding granulating base, the undermined edges, the soft papules outside the ulcerating patch, the slow course of the eruption, and the absence of concomitant syphilitic lesions render the diagnosis usually not difficult.

Tubercular Syphilide.—This form of eruption is characterized by the formation of tubercles varying in size from a pea to a bean, or larger, and correspond in every respect, except in the size and numbers, to the large papular syphilide already described. They are elevated, rounded in outline, semi-globular in shape, firm, dense, with a glistening surface, and of a dark red or brownish-red or coppery color. They are seated deep in the corium, and may extend into the subcutaneous tissue. They are single or multiple, generally the latter, but are never present in great numbers. As a rule, the smaller the papules the more numerous they are. The longer the period since the primary infection the larger, as a rule, will be the papule. They are either disseminated or grouped, and, if at all numerous,

show a marked tendency to an arrangement in clusters, circles, semi-circles, or lines. If neighboring circles unite, the eruption has a serpiginous form. They are not attended by pain or itching. They are situated especially upon the face, back, and around joints, but may appear on other parts of the body. The lesions have a very chronic course, and the infiltration constituting them may continue to spread peripherically, so as to cover large areas, as observed in the serpiginous form. This peripheral extension may occur in isolated or grouped tubercles. Im the former case the patch is circular in shape, until it reaches say one or two inches in diameter, when it ceases to spread at one part of the patch and continues at the remainder, thus producing the horse-shoe or kidney-shaped eruption. When the tubercles are grouped they soon coalesce, but the resulting patch never acquires the even circular outline of the one resulting from a single tubercle. The margin has a scolloped form, the number of curves corresponding to the number of tubercles present before they coalesced.

The tubercles may disappear either by fatty degeneration and subsequent absorption, or by ulceration. If they disappear by absorption, the skin appears atrophied and pigmented, the amount of atrophy depending on the size of the tubercle. The ulceration may be superficial or deep, depending on the depth in the skin of the tubercle. If seated in the upper part of the corium it will be superficial, but if it has extended into the subcutaneous tissue there will be deep ulceration, as the latter consists simply in a breaking down of the syphilitic infiltration. When ulceration occurs scabs form, the extent and thickness depending upon the extent and depth of the ulcerative process. They are always dark in color, firmly adherent, and may have the oyster-shell arrangement as already described. Beneath the scales an ulcer is always present. The base is covered with a grayish or sero-purulent pultaceous mass, the edges are sharply cut, the margin consists of a dense, dark red, sharply limited infiltration, external to the spreading, degenerated, broken down tissue. If the eruption has assumed the serpiginous or kidney shape in the manner already described, the

ulceration will also assume that same form. The ulcers heal by new tissue from the surrounding skin and from the connective tissue at the base, the round cells constituting the syphilitic infiltration being incapable of forming a higher tissue. Papillary formations sometimes arise from the base of the ulcers; they are met with especially on the scalp, are covered with a puriform, offensive secretion, and form the so-called *syphilis cutanea papillomata.*

Tubercle formations are usually a late manifestation of syphilis; they are very rare before the second year, are most frequent from the second to fourth, but may occur as late as ten or twenty years after the acquisition of the primary chancre.

Diagnosis.—The eruption may resemble lupus vulgaris, lepra, epithelioma, psoriasis, and simple inflammatory ulcer. In lupus vulgaris the tubercles are soft, the base of the ulcers are red, granular, and bleed easily; the margins flabby, and there are almost always tubercles to be found external to the general ulcerating patch. It commences generally in young persons, and its progress is many times slower than that of syphilis. The resulting scars produce more deformity, and do not show the scolloped edge of the serpiginous form of syphilis. The absence of syphilitic lesions (papules, gummata, etc.) on other parts of the body would assist to exclude syphilis. In lepra the history of the case, the slow growth of the tubercles, their varnished look, the absence of the raw ham color, and the concomitant lesions on other parts of the body, are sufficient for diagnosis. In epithelioma, the age of the patient, the situation of the ulcer, the single lesion, its slow growth, the red, easily bleeding base and raised, hard, waxy edge with or without "cancroid corpuscles," will always prevent confounding such a process with that of syphilis. In psoriasis, the manner of spreading and the character of the crusts may, though rarely, closely resemble that of tubercular syphilis, but the absence of ulceration or atrophy of the skin excludes syphilis.

Simple idiopathic non-contagious inflammatory ulcers of the lower extremities, resulting from a varicose condition of the

veins, and usually called varicose ulcers, are very frequently diagnosed as syphilitic by those not versed in the nature of the processes at work in the two diseases. How ulceration occurs and under what conditions, has been already described. It is always to be remembered that the ulcer in syphilis arises from a breaking down of the sharply limited, dense, dark red syphilitic infiltration present in the corium, and that this infiltration always exists as such for some time before undergoing the retrograde process. As the eruption is constantly extending by peripheral growth, it follows that, external to the ulcerated part, there will always be a zone of sharply limited, undegenerated infiltration. Outside of this infiltration the skin is unaffected by the syphilitic disease. In "varicose ulcers" the ulceration is the result of an ordinary inflammatory dermatitis, consequently the ulcer will probably not be so deep, the base redder, more granulation like, the edges sloping or perpendicular, rarely undermined, the margin may be red, firm, and elevated, but the redness mostly disappears upon pressure, and the elevation is not sharply limited, but a gradual sloping from the healthy tissue to the edge of the ulcer. This inflammatory area around the ulcer is always considerable in extent, and is the main guide in the diagnosis, for it shows that the ulcer is an inflammatory one. The shape of a varicose ulcer may be exactly the same as that of a syphilitic ulcer, and consequently can not be relied upon for making a diagnosis.

Gummatous Syphilide.—This is a late lesion, and consists in the formation of pea to walnut sized, round nodules seated in the subcutaneous tissue. They commence as pea sized, movable, circumscribed, rounded, firm, indolent nodules in the subcutaneous tissue, which afterward increase in size, from adhesions to the surrounding skin, and finally, when fully developed, represent walnut sized or larger, elevated, rounded, firm, nodules. Later they become softer, somewhat doughy to the feel, the overlying cutis becomes adherent, and later dark red or livid in color. The nodules may be single or multiple; are very slow in reaching their full development, and finally disappear either by absorption or ulceration. If they break down

and ulcerate, the resulting ulcer is fistulous, or roundish, or oval in shape, with clear cut edges and a base covered with a gummatous or a purulent material. The ulcer extends into the subcutaneous tissue, and may attack the periosteum, cartilage or bone beneath. The margin of the ulcer is infiltrated, and the secretion drying, forms thick, dark scabs. The ulceration may increase in width, and even assume the serpiginous form of some of the earlier lesions. The ulcer heals by granulation, and the resulting cicatrix is smooth, whitish in the centre, and pignented towards the peripheral part.

Gummata are usually seated upon the scalp, forehead, shoulders, or in the skin over the anterior part of the tibia. They are frequently associated with marked nocturnal pains.

Diagnosis.—Gummata may resemble in shape, size, feel, and situation, fibrous or fatty tumors, but the history of the case, the presence of scars, or other signs of syphilis, on other parts of the body, the rapidity of growth, the nocturnal pains, and the situation, especially when below the knees, will enable one to make a correct diagnosis. The ulcers from gummata may resemble epitheliomatous or simple inflammatory ulcers. In epithelioma the red, easily bleeding base, the waxy margins, the slow growth, the density of the base, and the situation are characteristic features. In inflammatory ulcers—the so-called varicose ulcer, the points for diagnosis are those already given under diagnosis from a tubercular syphilide.

Cutaneous syphilides are often associated with syphilis of the mucous membranes, nails, bones, and internal organs. Visceral syphilis and syphilis of the nervous system, bloodvessels, bones, etc., belong to internal medicine or surgery, and will not here be described.

Paronychia syphilitica.—Syphilitic paronychia is characterized by a reddened, swollen infiltration of the skin on the root and side of the nails of the fingers and toes. The infiltration disappears by absorption or ulceration, and the nail is cast off. It is frequent in the hereditary bullous syphilide in children. If the nail is affected independently, it loses its original color, the margin becomes brittle, "broken off," and irregular. This

condition is most common in connection with syphilis of the palm.

Erythema, mucous patches, ulcers, opacity of epithelium, and gummata occur on the mucous surfaces, and in case of doubtful diagnosis, the mouth, pharnyx and nose should always be carefully examined.

Anatomy.—As far as can be judged by the microscope, the pathological elements forming the syphilitic lesions do not differ histologically from the elements observed in some other inflammatory conditions. It is the cause of the lesion which is specific and probably depends on a special organism, as the cause of syphilis is a fixed contagium. The special characteristics of the syphilitic infiltrations have been already referred to; they are, the density of infiltration, its sharp limitation and inability of the cellular elements to produce a higher organized tissue; they, after a period, always undergoing a fatty degeneration, and disappearing by absorption or ulceration. The earlier syphilides are situated in the papillæ and upper part of the corium, and the later lesions in the corium and subcutaneous tissue.

In the macular syphilide there is round cell infiltration along the capillaries of the papillæ and upper part of the corium, and in the adventitia of the larger vessels, besides pigment deposits.

The papular lesions consist of a dense, sharply limited cell infiltration in the papillæ and upper part of the corium, and in the case of the larger papules in the subcutaneous tissue also.

The deeply lying tubercles, and gummata, have an outer portion of round cells and granulation-like tissue, and a central portion of gummous material consisting of degenerated cells.

In the broad condylomata there is granular degeneration of the epidermic cells, the cells of the interpapillary rete are swollen or absent, the rete is infiltrated with cells, and the papillæ and the papillary bloodvessels enlarged.

The vesicular and pustular lesions resemble the papular as regards the changes in the corium, but in the epidermis there is more exudation and round cell collection.

For a description of the changes occurring in internal organs, the bloodvessels, nerves, bones, etc., the reader is referred to works on syphilis.

Prognosis.—As regards the removal of the cutaneous manifestations in syphilis the prognosis is always very favorable. The length of time required for their removal differs in different cases, depending upon the form of the eruption, the condition of the patient's nutrition, and his ability to use the proper remedies. The macular is the easiest, and the pustular syphilide the most difficult to cure. If the person is debilitated, or the hygienic surroundings not good, or he is easily salivated, the prognosis is not so good. Syphilis, in old persons with a broken down constitution, and especially if intemperate, is often fatal either directly, or indirectly from pneumonia, or from erysipelas originating from an ulcer. In children, the prognosis is often unfavorable, the intensity of the process in their case being as dangerous as the slowness in old persons. In gouty and scrofulous persons, the disease is usually obstinate to treatment. The prognosis is greatly influenced by the kind of organ or system affected. Thus, when the lesions are in the cutaneous system the prognosis is much more favorable than when seated in the bones, iris, or brain. Syphilis of the nervous system is always a grave affection, although epilepsy or paralysis, the result of this disease, is more manageable than when occurring from other causes. Visceral syphilis is especially fatal.

Can syphilis be cured? That the disease can be cured is shown by well authenticated cases of a second infection. That the system may become free of any constitutional syphilis is further shown by the birth of healthy children from parents previously syphilitic.

Unfortunately we are unable to judge when in any given case the system is free of the poison. Tertiary lesions may form in a person who has for many years shown no trace of syphilis. The ability to beget healthy children is also no proof that tertiary lesions will not occur at some future time. Tertiary lesions, however, are but local pathological conditions and

their secretions are not infectious ; hence reinfection may occur during their presence in the system. When a patient has been properly treated for three years, and no lesions have formed for more than one year, it is generally considered that he can marry without danger to his wife or fear of begetting syphilitic children.

Treatment.—The treatment of the cutaneous syphilide is that of the treatment of syphilis in general, and is hygienic, constitutional and local. As already noted the severity of the cutaneous lesions depends in a marked degree upon the state of the nutrition of the body of the person affected. Thus the vesicular, pustular and ulcerative syphilides are met with especially in badly nourished individuals, and in those living under unfavorable hygienic conditions. This being the case it is always necessary in treating cases of syphilis to keep the person in as good physical condition as possible. Lesions which in well nourished subjects rapidly disappear under anti-syphilitic remedies will, in badly nourished subjects and broken down constitutions, often resist the same remedies until the general nutrition is improved, and the individual placed under favorable hygienic conditions. Persons with syphilis should not be kept in doors, but allowed to exercise in the open air or follow their usual vocation, provided it does not overtax their muscular power or expose them to inflammatory conditions. Their food should be liberal and nourishing, and wine and beer can be partaken in moderate quantities. Brandy, whisky, gin, etc., should, I believe, be avoided. Iron or other tonics should be given according to the special indications in any given case.

The constitutional treatment consists in the administration of mercury and iodide of potassium according to the indications of the case. Mercury is *the* antidote to the syphilitic poison, and consequently is indicated in all stages of the disease. Iodide of potassium causes the disappearance of gummatous formations, but does not prevent their formation, hence it is especially useful in the later stages of the disease, and in syphilis of internal organs.

The administration of mercury should be commenced as soon as a positive diagnosis of syphilis is made, and should be continued for at least two years or for one year after disappearance of all lesions. Whether the drug should be used continuously or with intervals of no treatment is still an undecided question. I believe it is better, instead of discontinuing the remedy, to change the form of the drug and give continuous treatment, so as to oppose the virus unremittingly during its active period. If the same form of mercury is always used it is often necessary to stop its administration for a short time, especially when it seems to lose its power over the lesions.

The drug can be used in all forms and stages of the disease, but where gummatous formations are present iodide of potassium should also be given either separately or in combination with the mercurial. I prefer to give them separately at different periods of the day, or give the iodide of potassium internally and the mercury by inunction. Anæmia, especially when caused by the syphilis, is no contra-indication to the use of mercury. In these cases, however, iron, good food and favorable hygienic surroundings assist very much as already mentioned. If the person is pregnant, treatment should be given until the seventh month, and preferably by inunction. Some physicians consider mercury contra-indicated in cases of chronic nephritis not dependent upon syphilis.

If a certain preparation fails to exert the desired effect upon the syphilitic lesions; or having been given for some time loses its action more or less, some other preparation should be employed, or the mode of administration changed. That the proto-iodide or the bi-chloride in a given case does not cause a rapid disappearance of the cutaneous lesions is no proof that calomel or inunctions of mercurial ointment or oleate of mercury will not do so, and *vice versa*, hence, in cases of slow recovery it is well to try more than one preparation to find out which works most actively. As long as lesions are visible the drug should be given in doses strong enough to just escape salivation, and after their disappearance, small doses, about one-

third of the previous quantity, should be administered, for about a year longer.

It is difficult to persuade patients to take medicine for a long period when no rash or other symptoms of syphilis are present ; but if the physician explains to the person affected, the true nature of the disease, and the ultimate dangers to their internal organs and bloodvessels, as well as future children from the virus, many of them will follow directions and endeavor to be cured if possible of the disease.

Mercury can be administered by *inunction*, *fumigation*, *hypodermically*, or *by the mouth.*

By inunction the system is brought more quickly under the influence of the drug than by any other means, and hence is specially indicated in all cases where a rapid effect is desired, as in syphilis of the eye, brain, nervous system, soft palate or larynx. In severe hereditary syphilis it is also preferable to treatment by the mouth. It is also to be employed in all cases where mercury is not well borne by the stomach, and in many cases of anæmia or syphilis in persons with chronic pulmonary disease. Finally, it can be employed against any form of syphilis that can be affected by any mercurial preparation given in other ways. The objections to its use in general in preference to other modes of administration are, that it is not so cleanly, that patients will not persist in its use, and that it frequently irritates the skin and produces an eczema, especially in children and persons with tender skin. The fact that patients object to employing this mode of treatment will in private practice always restrict its use to the special cases above mentioned.

The preparations employed for inunction are the blue ointment and the oleate of mercury. The latter is cleanlier to use, and is much more readily taken up by the skin, but I think it is a question if it acts as favorably against the syphilitic virus as the blue ointment does. If blue ointment is used, half a drachm to a drachm is sufficient for one inunction, and it should be rubbed in gently but firmly for ten or fifteen minutes with the palm of the hand moved in a circular manner

over an area several inches in diameter. The inunction should be made in a warm room, and the skin previously washed with soap and warm water. Inunctions can usually be continued weeks or months without producing salivation, but if this should occur, the applications should be stopped for a few days. If the skin becomes irritated, the oleate should be employed or the strength of the ointment reduced. If an oleate is employed, the twenty per cent. solution should be diluted with one or two parts of vaseline, and one drachm used for a single inunction.

Inunctions are to be made daily, and to avoid too much irritation of the skin from the mercurial, different parts of the body should be chosen for succeeding days. Hairy parts of the body are to be avoided lest peri-folliculitis be produced. Sigmund advised the following order as to the places for inunction: First day, one, or both inner and posterior surface of the calves; second day, both thighs, inner surface; third day, abdomen and sides of thorax, excluding the axilla and nipple region; fourth day, back; fifth day, both arms. Sixth day, commence to repeat, as before.

If an oleate is employed, it can be rubbed into the soles of the feet, especially in children; or in adults, where the skin is thinnest, as in the flexures and over the ribs.

Fumigation is too troublesome and difficult to carry out properly ever to become much employed in the treatment of syphilis. In cities and hospitals, with the necessary apparatus and attendants on hand, it can be used with advantage in some cases. It may be employed for any stage of syphilis, but more especially for the late ulcerating syphilides. The small papulo-vesicular eruption sometimes disappears rapidly by this mode of treatment. Calomel or the black oxide of mercury are the preparations sublimed. From ten to thirty grains is sufficient for one bath, and the sitting should last from fifteen to twenty minutes. The baths should be employed as long as the eruption is present. The action of the drug should not go beyond a slight touching of the gums.

The treatment of syphilis by hypodermic injections of calo-

mel, or other mercurial preparations, is not to be recommended, as the method is troublesome, painful, often produces abscesses, does not act, unless locally, as favorably as inunctions, etc., and is too expensive.

Mercury is given internally, as blue pill, gray powder, calomel, corrosive sublimate, or proto-iodide.

Blue pill in the dose of two to five grains daily can often be taken for a long time without producing gastric disturbance.

The gray powder is rather slow in its action, but is non-irritating to the stomach, and is very useful in syphilis in children, either acquired or hereditary, especially in the latter form. If it gripes, a small amount of opium should be mixed with it. The dose for adults is two to five grains three times a day, and for children half a grain twice a day. It should not be given, except in mild cases, when a rapid, active effect on the lesions is not required.

Calomel is more active than the gray powder, but is liable to irritate the intestinal tract. If it irritates, small doses of opium or Dover's powder should be combined with it. The dose is from one to three or four grains twice a day. It is a very useful preparation for hereditary syphilis in children, and is to be given in doses of one-eighth to half a grain twice a day. In nearly all cases in children, it should be combined with an iron preparation, of which the best is the saccharated carbonate given in doses of from one to two grains. If not well borne by the stomach, the gray powder can be given, or what is usually better, inunctions of blue ointment, or of the oleate, as already described. The effects of calomel can be very rapidly obtained by giving small doses; say one fiftieth to one-twentieth of a grain every hour. Thus administered, it is very useful in the severe headaches of syphilis. It may also be given in cases of iritis, in conjunction with inunctions of blue ointment in the skin around the eye, and atropin for dilatation of the pupil.

The bi-chloride of mercury, although perhaps the most frequently prescribed of all the mercurial preparations, is one of

the least useful ones. It is slow in its action, and is very liable to irritate the stomach.

The dose should at first be small and afterwards gradually increased if necessary. One-thirtieth to one-fifteenth, or one-tenth of a grain may be given two or three times a day. It may be given in pill form or with vegetable tinctures or syrups. It should always be taken after meals. It is frequently combined with iodide of potash for the late stages of syphilis, but I believe it is usually better to give the iodide and the mercurial separately at different times of the day and select as the mercurial that form best suited for the individual case. This form will probably be the proto-iodide, or the blue ointment. Tincture of the chloride of iron can be combined with corrosive sublimate in anæmic or "broken down" constitution cases.

The proto-iodide is the best mercurial preparation for internal administration. If pure, it may be given for a long period without causing gastric disturbance. As usually found in the market it sometimes causes griping or even diarrhœa, and to avoid this it is necessary to combine opium and hyoscyamus with it. It is to be given in pill form, the dose depending upon the effect desired. If the syphilitic eruption is extensive, or a rapid action of the drug is required on account of the situation of the lesions or danger to vital organs, it may be given in doses of a grain or a grain and a half three times a day until the gums become affected. In ordinary cases of secondary eruption, I give half a grain three times a day, or twice a day, according to the ability of the patient to take the drug as judged by the effect upon the mouth. If one and a half grains a day do not produce salivation that quantity is given until the eruption has subsided, and then the dose is reduced to a grain a day for a few weeks, and afterwards to half or a third of a grain for a year or longer, taking care to increase the dose or change the preparation for a time if there are any symptoms that the virus is not being controlled by the course followed. I prefer to give the daily dose two or three times in the day instead of at one time, as it seems to me that its action on the

disease is more energetic, and less griping results, when thus administered. The granules made by Garnier and Lamoureux are on this account very convenient and at the same time reliable.

The proto-iodide is useful for all the forms and stages of syphilis for which a mercurial is indicated, but is not as reliable as inunctions when a rapid effect is required.

Iodide of potash is given in the late secondary eruptions for gummatous formations, for tertiary lesions, and in affections of the bones, nervous system and internal organs. Even in these cases its use should not be long continued without giving a mercurial also, for, as already stated, though it may, and generally does cause certain lesions to disappear, it does not prevent their formation. Gummata of the subcutaneous and sub-mucous tissues, ulcers of the pharynx and larynx with rapid destruction of tissue, periosteal pains and late effects of syphilis, as occurring in internal organs, muscles, nervous system, blood-vessels, etc., should be treated by iodide of potash, and the use of the drug continued for two or three weeks after disappearance of the lesions. In the macular and early papular syphilides it is of no service unless the mucous membrane becomes affected, when it may be given for a few days in addition to the mercurial treatment. If a rapid effect is not obtained in any given case from the iodide, its use should be discontinued and mercurials employed. I have seen iodide of potash in large doses given for several months for a severe ulcerating syphilide without exerting a particle of power over the disease, when subsequent treatment by mercury both internally and locally caused the ulcers to heal in a few days. These cases teach the lesson never to continue giving a certain drug for any length of time in syphilis, unless you observe improvement in the symptoms from its use. If the disease does not yield, the drug, or the preparation, or mode of administration must be changed.

The iodide should be given after meals and in large quantities of water. It can be made fairly palatable by dissolving it in an aromatic water and adding the compound tincture of cardamoms or the syrup of orange. Many prefer to have the

taste disguised by a vegetable bitter, as the compound tincture of gentian. If it causes irritation of the nose and eyes it should be combined with carbonate of ammonia or the aromatic spirits of ammonia. In syphilitic affections of the brain associated with convulsions, epilepsy, etc., the bromide should be given with the iodide. Unless the symptoms are urgent as in cases of syphilis of internal organs and especially of the nervous system it is best to commence with small doses and afterward gradually increase the amount to be taken daily. Commencing with a scruple a day in divided doses it is rarely necessary to increase the amount to more than one drachm, although in brain syphilis, especially if associated with convulsions, two, three or more drachms may be required to exert the desired effect.

These large doses should be employed only as long as urgent symptoms are present; upon their subsidence the drug should be continued in the ordinary amount, for the necessary length of time. The iodide may be given in combination with a mercury preparation, as the biniodide or the bichloride, but I believe it is better to give them separately, at different periods of the day. If the stomach is irritable the mercurial can be employed by inunction, and the iodide of potash, or, what is sometimes better borne by the stomach, the iodide of soda, given internally. Whilst taking the iodide the hygienic surroundings should be as good as possible, and the food abundant and nourishing.

Local treatment.—Syphilitic lesions of the cutaneous and mucous surfaces can be more rapidly removed by a combination of local and general treatment than by constitutional treatment alone. This combined treatment is to be employed when the lesions, no matter of what form, are situated upon exposed parts of the body; in cases of condylomata, in lesions upon the mucous membranes, and in the ulcerative syphilides, calomel, blue ointment, the acid nitrate of mercury, iodoform, oleate of mercury and nitrate of silver, are the substances usually employed for local treatment. The nitrate of silver is used against tertiary lesions of the mucous membrane of the

mouth, and the others are used against lesions accompanying constitutional syphilis—the secondary lesions. Calomel is to be used only upon absorbent surfaces, as in the condylomata and ulcerating lesions. Blue ointment can be used in all cases. It is to be spread upon strips of linen and bound firmly to the affected part. The acid nitrate of mercury is used as a caustic in obstinate cases of mucous patches. Iodoform is sprinkled upon ulcerating surfaces. It sometimes causes pain and very often exerts no beneficial action upon the lesion. Its value, I think, has been over-estimated. The oleate can be employed in the same cases as the blue ointment, and is preferable to it if the lesions are deeply seated, as in the late secondary lesions.

In syphilitic lesions of the face, local treatment is always to be employed to prevent disfiguration and allow the patient to pursue his usual occupation, or take out door exercise without feeling that persons will recognize his disease, whilst at the same time he is being radically treated by constitutional means. Papules and tubuerles are treated by the blue ointment, and in an ulcerating syphilide, calomel is sprinkled upon the ulcerated surface, and an oleate or blue ointment applied. The blue ointment should be changed once a day, and the calomel applied about twice a day. In cases of iritis the pupil must be quickly and well dilated with atropin ; and blue ointment, or an oleate, rubbed into the temple once or twice a day. In condylomata, calomel sprinkled upon the papules, and isolation with charpie, or burning with a solution of corrosive sublimate in alcohol, is all that is necessary. I prefer the use of the calomel and charpie. If the condyloma is dry it should be first moistened with a solution of common salt, and the calomel then applied. Cleanliness in all cases is necessary to success in their removal. They can also be removed by touching them two or three times a day with a two to five grain solution to the ounce of nitrate of silver. In papular and ulcerative affections of the mouth, astringents will suffice for mild cases, but in severe cases, more active agents are required. Opaque patches are to be touched occasionally with nitrate of silver, or in more obstinate cases, with acid nitrate of mercury, al-

though this latter is not always necessary. If there is ulceration of the softer tissues of the mouth, thorough cauterization, combined with energetic internal treatment, is necessary to prevent irreparable loss of tissue. Syphilis of the general surface is to be treated in the manner already described for that of the face. Gummata are to be opened only when the skin over them is red and tense. An apparent fluctuation in gummata is no indication for the use of the knife, and the internal administration of iodide of potash will soon cause the absorption of the mucoid contents.

For further information on the treatment of syphilis, the reader is referred to works devoted exclusively to this disease.

HEREDITARY SYPHILIS.

This term is to be restricted to cases where the child is infected *in utero* through one or both parents. Syphilis acquired after birth runs essentially the same course as in adults.

Syphilis may be transmitted from parent to offspring, from (a) a mother infected either before conception or up to about the seventh month of pregnancy; (b) from a father, the mother being healthy—(according to most authorities, or only apparently so according to others); and (c) when both parents are syphilitic; in which latter case the disease appears in an intensified form.

The fœtus may be diseased at an early stage of intra-uterine life, and consequently die and be cast off, abortion taking place; or it may be born alive prematurely; or be still-born at full term; or it may be born alive at full term and present some of the characteristic lesions of syphilis; or, as most frequently happens, appear perfectly healthy at birth and later give evidences of its syphilitic taint.

Recurring abortions are among the most characteristic symptoms of syphilis in pregnant women, and the more recent the general syphilis in the parents at the time of conception the greater will be the liability to abortion; hence after many abortions and still-births a child may finally be carried to

full term and appear quite healthy at birth. The intensity of the inherited disease varies in degree, according as the transmission is from one or both parents, and according to the length of time which has elapsed from the date of the original infection of the parent.

Children born alive with an eruption already present, are usually small and undeveloped, with a thin, wrinkled skin and an aged appearance. Beside any of the usual forms of eruption which may not yet have appeared, tubercles, like boils may develop in the subcutaneous connective tissue, which break down and discharge ; pemphigus bullæ also may appear more or less extensively over the body, but especially on the hands and feet. These children usually are marastic and perish early from diarrhœa and other digestive disorders, complicated perhaps with visceral syphilis or suppuration of the epiphyses.

The bullous syphiloderm known as pemphigus neonatorum syphilitica consists of flabby bullæ from the size of a pea to that of a hazel-nut, usually flat and disseminated, but may become confluent. They may be flaccid or distended, and their contents clear, cloudy, sanious, or contain a thin greenish pus. The favorite seat of the eruption is on the soles of the feet and palms of the hands, and the bullæ are also disposed to appear on the fingers and toes and lower limbs. The epidermis is apt to be ruptured, laying bare the very red papillæ beneath, or showing an excoriated, ulcerated base which is very slow in healing. These ulcers are not unfrequently seen on the joints of the fingers and toes. Sometimes almost the entire body, especially the face, is covered with these bullæ, which, on drying, form crusts which spread at the edges and become confluent. A very similar eruption occurs in cachectic children who are not syphilitic. The distinction is made generally by attention to the concominant symptoms, though, according to Zeissl, the bullæ of the non-syphilitic form are distinguished by the rapidity with which they dry up.

According to Lancereaux, the syphilitic pemphigus appears within a few days after birth and is located especially upon the

palms of the hands and soles of the feet, while the bullæ in the non-syphilitic variety are more generally distributed over the body.

As stated above, the majority of children are born apparently healthy, the first symptoms of syphilis appearing at a later period; in almost all cases, however, within three months. According to Diday's table of reported cases—158 in number—the first symptoms appeared during the first month in 86 cases; during the second month in 45, during the third in 15, and at the fourth month in 7. Thus in the great majority of cases the disease makes its appearance during the first six weeks or two months, and that after the fourth month the probability is that the child has escaped infection. Symptoms appearing later and said to be present for the first time are to be very doubtfully attributed to hereditary syphilis. In many cases of disease in children of three, four or five years of age, the lesions of acquired syphilis have been erroneously attributed to hereditary taint because no discovery of an initial lesion could be made.

Some children born with hereditary syphilis are at first plump and well nourished, and for a few weeks continue their normal development, but afterward gradually become delicate, anæmic, and begin to waste, and frequently to suffer from indigestion and diarrhœa. The skin assumes a dingy, muddy hue, the subcutaneous fat disappears, and the skin hangs in loose wrinkles and folds on the extremities, and exhibits many creases and furrows. The face has a pinched and weazened expression like that of an old man, the so-called *senile countenance*. One of the earliest specific symptoms is coryza. The child "snuffles" and the discharge from the nostrils is at first thin, but becomes thicker and more tenacious, gradually drying, and accumulating and blocking up the nasal passages, so as to interfere with or entirely prevent the act of nursing, whereby the infant is still further reduced in strength from deprivation of its nourishment. The discharge irritates the nasal orifices and the upper lip, and crusting takes place. Later on, if the process is not arrested, ulceration of the nasal mucous mem-

brane results, and the nasal bones may become carious and come away in fragments, the discharge becoming sanious, purulent and very fœtid.

At this time, too, the mouth and throat are affected by erythema and mucous patches, and the coryza is accompanied by more or less hoarseness and even aphonia. The hoarse, squeaking cry at this stage is peculiar to hereditary syphilis.

Lesions of the skin usually appear about the same time as the coryza. The eruption may take the form of erythema, maculo-papules, papules, etc., or a combination of these lesions. Blebs or bullæ generally appear with the severer syphilis present in bad cases at birth. Most frequently a mixture of both macules and papules are observed. Sometimes the whole body, especially the face, is covered with large, flat copper-colored papules, more or less coalescent in places. Again, the eruption is confined to a few bright red papules upon the buttocks which, when moistened by the discharges, assume soon the characteristics of mucous patches and may even result in tolerably marked ulcerations. At the angles of the mouth and the eyes, in the creases of the neck, behind the ears, in the inguinal folds, and at the sides of the scrotum, or wherever there are opposing surfaces moistened by perspiration or discharges, the papules frequently take the form of mucous patches and rapidly increase in size by coalescing, etc.

In the earliest stage of the maculo-papular eruption the color may have a more yellowish or fawn-colored tinge which afterward deepens to brownish red. Sometimes, before any general eruption has appeared, the attention will be attracted to the shiny, glistening appearance of the epithelium on the palms of the hands and soles of the feet, while there may be a brownish discoloration of the skin of the eye-brows alone or this be accompanied by a dingy, smoky tint of the prominent surfaces of the face, while the hollow of the inner canthus and of the cheeks and under the lower lip may be paler and clearer in comparison. Aside from this discoloration, there may be no general eruption or even snuffles for a time,

to assist one in making a diagnosis. The papules about the buttock very much resemble the excoriated and moist, or the dried and crusted flat papules of an eczema, or eczema-intertrigo, often observed in children who have diarrhœa with acid passages and urine, when great cleanliness is not practiced. In the latter case, however, the papules will not be observed at the margin of the anal mucous membrane and skin, as is the case with mucous patches, and also the eruption will be distributed pretty symmetrically about the buttocks and confined to the region usually covered with a soiled diaper. The syphilitic erythematous patches (which are often quite extensive about the thighs and lower part of the trunk) in a few weeks usually become broad, flat papules of the size of a finger nail, or run together into extensive patches of infiltration. They may be dry, or squamous, or moist, according to the situation, etc.

These broad papules and mucous patches are the common syphiloderm of children. At the same time as the appearance of these eruptions on the skin, signs of stomatitis and pharyngitis are observed, and mucous patches appear on the mucous membrane of the mouth, palate and throat.

Children with hereditary syphilis, who have passed through the acute stage, may afterwards develop normally and remain free from any subsequent effects of the poison, developing in normal manner, or remain delicate and feeble, and bear traces of the disease for life. During the latent stage, subsequent to about the first year, relapse may occur, mostly in the form of condylomata, but rarely, if ever, is there a return of the characteristic rashes of the acute stage. In general, however, these children may enjoy continuously their usual good health. About the age of second dentition or puberty, following this so-called latent stage, new symptoms are frequently developed, mostly the so-called tertiary lesions of the bones, subcutaneous connective tissues, viscera and nervous system. There occur serpiginous ulceration of the skin or eruptions resembling rupia, the character of the individual lesions not differing from those of the variety in acquired syphilis which have already been described.

A somewhat peculiar affection of the bones of the fingers and toes occurs in syphilitic children, during even the earlier stages of the disease, known as dactylitis syphilitica. It consists of a gummy periostitis or ostitis, affecting chiefly the posterior surfaces of the phalanges, and most frequently the proximal phalanx. It may, however, involve the carpal or tarsal bones. It usually is a painless and insensitive swelling at first, and is confined at the outset to the shaft of the phalanx, not involving the joint. (See cut 28.) This form of bone-lesion also occurs in the later tertiary stage, but, different from the usual course in acquired syphilis, it not infrequently is met with in the first months of the disease. If not cured it runs the course of other syphilitic bone affections, and with the usual results of caries and necrosis.

FIG. 28. — Syphilitic dactylitis. (Berg.)

These deep seated lesions require notice here only for the purposes of diagnosis, and to enable us to recognize the subjects of hereditary syphilis.

For the purpose of diagnosis we can, with Mr. Hutchinson, divide the course of the disease into three stages: 1st, infantile period; 2d, the stage of latency; 3d, that of tertiary symptoms.

Some of the peculiarities of the first and second stages have been described already. In addition to the senile facies, the shiny palms of the hands and soles of the feet, the discolored eyebrows and peculiar eruptions described above, these children may bear evidences of a fœtal arachnitis, as shown by the prominent forehead, and occasionally by a general hydrocephalus. This hydrocephalus, however, in contra-distinction to one dependent upon a non-specific cause, is capable of much improvement from specific treatment. In the third period we recognize hereditary syphilis from the marks left by previous lesions.

Genital atrophy and general arrest of development (infantilism) are important results of previous syphilis. The stature may be dwarfed, virility retarded, the development of the testicles or ovaries and mammæ delayed or arrested, and the hair of the beard and pubis scanty, thin or absent. Deformities of the cranium may be present as the result of early hydrocephalus, giving a protuberant forehead, prominent bosses on the cranial bones from hyperostoses, sometimes asymmetry of the cranium or a keel-shaped forehead, (Fournier.)

The nose may be retracted at the end from loss of the cartilages, or broadened and flattened at the base from thickening of the periosteum of the nasal bones during the existence of the coryza, or the bridge may be flattened from loss by caries of the nasal bones. Bony tumefactions may be found on the shaft, or at the extremities of the long bones, especially of the tibia; also deformities of the joints, as a result of syphilitic arthritis, either dry or suppurative.

Gummy infiltration with rapid destruction of the soft palate, is observed not infrequently in the early part of the third period, and leaves a gap resembling, superficially, ordinary cleft palate.

Cicatrices on the skin, especially characteristic, may be found in the fine lines at the angle of the mouth and nostrils, the result of mucous patches in infancy, also in the lumbo-gluteal and posterior-crural regions. These are often very slightly marked and faint.

Interstitial keratitis and iritis are not uncommon incidents of inherited syphilis which leave permanent traces. A milky cloudiness, like that of ground glass, involving the cornea, may appear, and afterwards very much clear up, but nearly always one can detect a faint haze in the substance of the cornea, there being no scars on its surface, as in ordinary leucoma. The sclerotic in the ciliary region is somewhat dusky and thin.

Nervous deafness, or deafness from purulent otitis, has also been observed. These two series of symptoms, with peculiar alterations of the teeth, constitute the so-called "triad of Hutchinson." The teeth may be dwarfed, or undeveloped, or

easily decay, as the result of syphilis, without presenting any special diagnostic peculiarities. Either deciduous or permanent teeth may suffer much in their nutrition and development, but it is the second dentition which is characteristically affected, and especially the upper central incisors. "The characteristic malformation of the upper central incisors consists in the dwarfing of the tooth, which is usually both narrow and short and in the atrophy of its middle lobe. This atrophy leaves a single broad notch (vertical in the edge of the tooth, and sometimes from this notch a shallow furrow passes upwards on both anterior and posterior surfaces nearly to the gum. This notching is usually symmetrical." (In a few cases only one incisor is affected.) "Sometimes these teeth diverge, and at others they slant toward one another." (See cut.)

FIGS. 29.—Syphilitic teeth. (Hutchinson.)

These teeth are spoken of as "screw-driver" teeth. Often the canines are affected, being dwarfed to small pig-points, and carious.

Many of the erosions and furrows seen are not characteristic of hereditary syphilis, and the notched teeth are not absolutely pathognomonic of it, but constitute a strong presumption.

Irregularity of implantation and arrangement of the teeth, the spaces separating the teeth being much augmented, are especially observable in hereditary syphilitics.

The tertiary lesions in this period are often symmetrical (as double keratitis, etc.) in contrast with what occurs in this stage in the acquired disease.

The fact of the polymortality of syphilitic families, and the direct examination of the brothers and sisters, will often aid greatly in forming a diagnosis.

The prognosis in inherited syphilis is favorable or unfavor-

able, in proportion to the date of the appearance of the eruption, its intensity, and the general physical condition of the child.

Children born covered with a profuse rash, and marastic, are generally also affected with visceral syphilis, and die very soon.

Nasal catarrh, if severe, may block the nasal passages and prevent nursing, and so fatally interfere with nutrition. Disorder of the stomach and bowels, with vomiting or diarrhœa or both, is a very unfavorable complication.

When the child is born plump and remains in good condition for a few weeks, and then breaks out with a moderately extensive eruption, proper treatment is very effective and speedy cure generally the result.

The *treatment* of hereditary syphilis, in the early forms at least, consists in bringing the system speedily and fully under the influence of a mercurial. For general systemic effect inunction is one of the best, and, perhaps, the best method of employing the remedy. One or two drachms of mercurial ointment may be rubbed up with an equal amount of vaseline, and rubbed partly into the skin of the abdomen and partly smeared on a broad flannel bandage, covering the abdomen and chest of the child; this to be renewed every two or three days without washing the skin. In this way any irritation of the stomach by the drug is avoided. But there are cases in which the indigestion, vomiting and diarrhœa, with ill-smelling passages resulting in general marasmus, will be much benefited by the local anti-fermentative effect of calomel in minute doses, in addition to its specific action on the syphilitic lesion. One-tenth to one-third of a grain of calomel, mixed with one-half grain of ferri carb. saccharat. and given three times a day, often acts very favorably: or hydrarg. cum creta can be substituted in doses of one-third of a grain. Where any visceral lesions are suspected, there is an advantage to be gained by giving the mercurial internally. A pretty general and profuse rash can be made to disappear very rapidly, with equally good effect upon the general nutritive condition, by rubbing in daily over the affected surface an ointment of ung. hydrarg. ammoniat. and vaseline in the proportion of one to four. Oleate of mercury is

a very effective local application to a limited lesion. The moist condylomata on the nates, scrotum, etc., should be dusted with calomel, which will cause their rapid disappearance.

Baths and fumigations are, practically, not very available. Medication through the medium of the nurse's milk is, at present, pretty much given up as of little practical merit.

Iodide of potassium should be used for the removal of the late lesions of hereditary syphilis, such as periosteal nodes and gummy tumors, etc., and in doses, and according to the methods proper in the acquired form; but a long course of mercurials is needed to confirm the cure or prevent the return of the symptoms. Usually the medication will require to be continued for two or three months to produce entire removal of the lesions, and it should be continued for probably at least six months longer to confirm the cure, and be renewed again if any manifestations should ever subsequently return.

The management of the child's diet and hygiene and the regulation of his digestive functions is of the greatest importance, and upon their proper management almost as much depends for success as upon the mere administration of the specific remedies.

ERYTHEMA MULTIFORME.

Definition.—An acute inflammatory disease, usually symmetrical; appearing especially upon the dorsum of the hands and feet, and characterized by the formation of variously sized and shaped spots of an erythematous character.

Symptoms.—The eruption is almost invariably symmetrical, and appears usually upon the dorsum of the hands and feet and adjoining part of the forearm and leg, but may appear first on other parts of the body. The lesions are of an erythematous type, associated with more or less exudation from the bloodvessels, and are remarkable for the variety of forms they may assume within a few hours of their existence; commencing as macules, they may soon appear as papules, tubercles, vesicles or bullæ, according to the amount of exudation present.

The eruption commences as pin-head sized or larger, flat, red macules, which spread rapidly by peripheral growth ; or as elevated, sharply limited, reddish papules of a firm, œdematous, or normal feel. In a few hours the spots enlarge by peripheral growth to finger-nail or larger sized erythematous patches ; or from increase in the amount of exudation form papules, tubercles, vesicles or bullæ. The central portion of the erythematous patch, that is, the oldest portion of the lesion, soon commences to disappear ; it sinks in and becomes cyanotic from stasis in the venous capillaries, whilst the peripheral part still maintains its red color. If the erythematous patch continues to increase to finger-nail or larger in size, the lesion will acquire a ring form, from this spreading at the periphery and disappearing of the older central exudation. When the lesion has this form it is called *erythema annulare*, and consists of circular, spreading patches and a fading centre. If two or more neighboring rings coalesce, with disappearance of the exudation at the place of union, serpentine lines or bands will result. This form is called *erythema gyratum.* If a new patch forms within an existing ring and undergoes the same changes of form and color it is called *erythema iris.* Sometimes two or more rings will form in succession within an existing ring, and as each undergoes the usual changes in color the patch will present a variegated appearance from the red, blue, yellow and greenish colors present. If a patch acquires a considerable size and has a clear, well defined spreading margin, occupying but a part of a circle and an almost normal older part, it is called *erythema marginatum.*

From the number of lesions usually present and the changes they undergo, the part affected in a few days becomes dark-bluish in color, cold to the feel, and upon pressure shows pigmentation to exist. Even hæmorrhage occasionally occurs ; the result of the stasis in the venous capillaries. If new patches continue to form there will be a combination of bright red from the new spots, and of dark blue from the older ones.

The lesion is frequently papular, the papules being discrete or aggregated, flat, elevated above the general surface, of vari-

able size and shape, and of a bright red or violaceous color which disappears upon pressure—*erythema papulatum*. They last about a week and disappear with or without desquamation. If the lesion is large it is called an *erythema tuberculatum*. They may increase by peripheral growth, as in the case of the macules. Occasionally there is sufficient exudation present to form a vesicle upon the summit of the papule, forming an *erythema vesiculosum*, and as the papule spreads peripherically whilst the central part subsides and becomes cyanosed, elevated rings are formed, with a vesicular periphery and a cyanosed centre, representing *herpes circinatus*.

If similar new rings form within the existing ring it is called *herpes iris*.

The exudation may be sufficient to form bullæ, forming an *erythema bullosum*.

These vesicles or bullæ may arise upon the summit of either macules, papules or tubercles, and rarely rupture. Macules, papules, tubercles, vesicles and bullæ may all be present at the same time, as also the forms annulare, gyratum, marginatum, circinatus and iris; all being symptoms of the same disease; the differences in character depending upon the mode of spreading and the amount of exudation present; hence the appropriateness of the term erythema multiforme.

The individual lesions last only a few days, and the whole eruption usually disappears in from two to four weeks, although it may be prolonged several weeks by new lesions appearing, either on the same region or on other parts of the body. When disappearing, it leaves a bluish tint, or slight pigmentation and desquamation. Itching is usually absent.

The eruption is sometimes accompanied by fever, pains in the joints, gastro-intestinal disorders and mental depression. Endocarditis, pleurisy, hæmorrhage from the kidneys have also been observed. As erythema multiforme is a symptomatic eruption, these conditions are usually either the cause of the eruption or have a similar origin.

Erythema Diphtheriticum.—In some cases of diphtheria a rash similar to the above appears upon the skin. The skin becomes

affected either in the early stages of the disease or at a later stage when there is severe blood poisoning.

Early Eruption.—Sometimes at the commencement of the disease, sometimes as late as the second or third day, a diffuse erythematous rash of variable extent appears. When limited in extent it is generally present upon the anterior surface of the thorax or abdomen, though it is generally present also upon the extremities. In some cases it is not a diffused erythema, but presents a mottled, punctated appearance, like in many cases of scarlatina, normally-colored skin alternating with pin-head sized red spots. The rash is from bright red to pale red in color and disappears upon pressure. It is not perceptibly elevated above the general surface. It does not itch or burn, and is not accompanied by marked elevation of temperature. After lasting twenty-four to forty-eight hours it disappears without desquamation. It occurs both in mild and severe cases of diphtheria.

Rash of Septic Diphtheria.—This eruption, which differs considerably from the earlier appearing rash, appears only after the diphtheria has lasted several days and the system is more or less profoundly affected by the diphtheritic septicæmia. It occurs especially in connection with nasal diphtheria, and appears most frequently upon the extremities. It is usually limited in extent, but may be general over the whole body. It commences as pin-head sized, or larger, elevated, erythematous spots, the redness disappearing upon pressure. A large number of spots may appear simultaneously or within a few hours, on the same, or on different portions of the body. Each spot soon commences to spread peripherically, and generally after they have reached the size of a one-cent piece, become depressed and cyanosed, or paler in the centre. They continue to increase in size by peripheral extension at the same time that the central part continues to return to a normal condition. In this manner rings are formed, and if it has attained any considerable size it will show a red, elevated periphery, more internal a cyanosed part, and a normal centre—an erythema annulare. These rings may increase in size until they reach several inches in diameter,

the red, elevated periphery being generally not more than one-third of an inch in diameter and sharply limited externally. At the same time that these spots are spreading new ones continue to arise and a multiform erythematous eruption results. The rapidity with which the erythema spreads varies greatly in different cases and in different spots on the same person. Sometimes they require two or three days to attain any considerable size, and again I have seen a ring three inches in diameter form in fifteen minutes. Neighboring rings often coalesce, producing the forms gyratum and figuratum. On dependent parts of the body the spots do not clear up as much in the centre as they do on other regions, so that instead of rings there are large patches with bright red margins and a somewhat cyanotic centre. The eruption does not itch or burn, disappears without desquamation and occasionally leaves a slight pigmentation.

Sometimes the eruption does not clear in the centre, but forms large, irregular raised patches, or in other cases it resembles that of measles.

In fatal cases, the eruption continues until death ; new spots arising on the old ones, and after reaching a certain size, remaining as elevated, reddish patches or rings.

Anatomy.—The eruption consists in a vaso-motor disturbance. There is at first capillary hyperæmia and afterwards passive venous capillary distension. The amount of exudation varies from the small amount present in the macular form to the considerable amount occurring in the bullous form. There may also be hæmorrhage into the lesions.

Etiology.—From its symmetrical character and definite course the eruption is to be regarded as symptomatic of some special blood condition which acts through the nervous system upon the peripheral bloodvessels. The special conditions producing it are not as yet well-known. We have seen that the poison of diphtheria can produce the eruption. It may arise from gastro-intestinal disorders, genito-urinary diseases and the rheumatic condition. It is most frequent in spring and autumn, and occurs generally in young persons. It is more frequent in females than in males.

Diagnosis.—The symmetrical character, rapid course, variety of form, change in color, situation and absence of burning are sufficently characteristic to enable the diagnosis to be easily made. It might be confounded with bruises, erysipelas, urticaria, erythema nodosum, and papular eczema. In bruises there is an absence of symmetry and multiformity of lesions as well as the peculiarity of the situation and number of spots observed in erythema. In erysipelas the skin is hot, burning, shining, and the lesion is more deeply seated. In urticaria there are wheals which form and disappear rapidly, the skin is irritable and shows wheals after scratching with the finger nail, the lesions burn or sting and are not so red in color, as those of erythema multiforme. In lichen urticatus, which is probably closely related to erythema multiforme, the papules are seated upon wheals which itch very much. In erythema nodosum the nodules are raised, oval or rounded in shape, firm, painful, deep seated and situated especially along the ridge of the tibia. In papular eczema the papules are small, conical in shape, itch greatly, do not form rings, and do not become cyanosed.

Prognosis.—The prognosis depends upon the nature of the disease of which the erythema is symptomatic. Usually it is favorable, the eruption disappearing in from two to four weeks. Relapses may occur, but are not frequent.

Treatment.—If there is heat or burning, cold water, alcohol and water, a lotion of acetate of lead, or a protecting powder as starch, oxide of zinc, etc., may be used. The internal treatment is the most important. At present we know too little of the cause of the eruption and are consequently obliged to treat it on general principles. Generally tonics, as iron, quinine, strychnine are indicated. Any intestinal derangement should be corrected. If rheumatism is present, or rheumatic pains in the joints, alkalies should be given. The diet should be of an easily digested kind, and alkaline mineral water can be ordered for thirst. If septicæmia is present, as in the case of diphtheria, stimulants, tincture of the chloride of iron, carbonate of ammonia, quinine in small but frequently repeated doses, and a nourishing diet are to be given.

ERYTHEMA NODOSUM.

Syn.—Dermatitis contusiformis ; Urticaria tuberosa.

Definition.—An acute inflammatory affection characterized by the formation of variously sized, elevated, roundish or ovalish, erythematous looking nodules, situated usually upon the lower extremities, over the tibia.

Symptoms.—The disease is generally ushered in with fever, gastric disturbance, malaise, and pain in the joints. The eruption forms rapidly and consists in the formation of hazelnut to hen egg sized or larger nodules which are elevated, roundish, ovalish or semi-globular in shape, firm, painful to pressure and with a smooth erythematous or rose like surface. They are either single or multiple, though generally there are a number present and are frequently symmetrical in their distribution. Their usual situation is the lower extremities, as the skin over the tibia, but they are also frequently met with on the forearms, especially over the ulna, and may appear on other parts of the body, as the face, shoulders and thighs. The first nodules frequently appear over the tibia and after a few days others appear on the thigh or forearm, etc. The number present may range from one to twenty or even more, and are usually disseminated ; but no matter how closely they may be grouped they never coalesce. They are rarely so small as not to form elevated nodules and have abnormally colored skin over them. Occasionally the inflammatory process is so intense as to cause hæmorrhage in the central part of the nodular area.

After existing one, two, or three days, they begin to change color and consistence, the infiltration becomes less and less, and in five to ten days they completely disappear, leaving behind them, except in the case of the very small nodules, a dark brown discoloration. During the stage of disappearance the color, which at first was bright red or of a rosy tinge, becomes later, brown-red, green, and yellow, like the color changes in ordinary contusions of the skin. If hæmorrhage has occurred the changes take place slower than usual. The consistence,

which was at first firm, becomes softer, more boggy-like, and the pain diminishes with the diminution in the infiltration. The fever subsides as soon as new nodules cease to form. The nodules never suppurate.

Very rarely vesicles or bullæ form on the surface of the nodules. Lymphangitis has also been observed arising from the nodules.

The duration of an individual nodule is from five to ten or fourteen days, but as new nodules continue to form for some time, the eruption usually lasts from three to four or five weeks, and may even be prolonged for several months.

The eruption may be associated with pain in the joints, derangement of the stomach, colic, diarrhœa, painful nodules in the tongue, mouth and pharynx.

Anatomy.—The local process consists in an inflammatory œdema, with a large amount of serous transudation, some blood corpuscles and occasionally a hæmorrhage.

Etiology.—The cause of the disease is not well known. It may appear as a distinct disease or only as part of an erythema multiforme. Usually ordinary erythematous patches are present in cases of erythema nodosum ; it has a marked tendency to occur on the same parts of the body ; it occurs about the same time of the year and has an acute and typical course. The above facts justify the view that the two diseases are closely related.

Erythema nodosum is met with generally in children and young persons, especially weakly females, but may also occur in older, well-nourished and otherwise healthy subjects. It occurs most frequently in spring and autumn. It has been observed as a complication in cases of disease of the heart, bloodvessels, lungs and pleura conditions, which interfere with normal circulation and respiration. Rheumatism, endocarditis, tuberculosis and chlorosis have been regarded as frequent causes, but probably do not bear such a close relation to the disease as has been supposed. Lewin regards it as an angio-neurosis, the dilatation of the bloodvessels and the consecutive exudation resulting from a change in the tone of the vaso-motor nerves.

A more probable explanation is that which refers the local changes to the presence of a noxious substance in the blood which causes the prodromal fever—an irritation in the walls of the blood vessels,coagulation of blood within them at the seat of the lesions, and secondary peripheral inflammation. I have observed a case of erythema nodosum associated with herpes of the external ear both eruptions dating from the same day, and apparently, at least, depending upon the same condition.

Diagnosis.—The nodules may resemble bruises of the skin, abscesses and syphilitic gummata. Bruises never present the rosy hue of erythema nodosum. In addition the number of the lesions, their situation, and when multiple the different stages to be observed in the different nodules render the diagnosis easy. In abscesses the previous history, the number and course of the lesions are different. The lesions in erythema nodosum never suppurate. Non-ulcerating syphilitic gummata are sharply limited, grow slowly, have no rosy skin over them, are non-symmetrical, unaccompanied by fever, few in number and generally met with in adults.

Prognosis.—The prognosis is good, as the disease tends to spontaneous cure. In weakly infants or children the pain and loss of appetite may interfere so much with the general nutrition as to lead to serious complications of the intestinal tract or pulmonary organs. If hæmorrhages occur, especially from the kidney, the case may terminate fatally. Relapses are rare.

Treatment.—The treatment is local and constitutional. Local treatment consists in rest in the recumbent position, cold water applications, with or without the addition of lead and opium. The kind of internal treatment to be given will depend upon the condition in individual cases. In children easily digested food and correction of any intestinal derangement is required. In all cases the complications, chlorosis, rheumatism, pleurisy, etc., are to receive appropriate treatment. If fever is present quinine or salicylate of soda, may be given. In well-nourished persons with but slight fever, a low diet and mineral saline waters are all that is requisite.

URTICARIA.

Syn.—Hives; Nettlerash; Febris Urticata.

Definition.—Urticaria is an affection of the skin accompanied by the rapid development of ephemeral wheals of a whitish, pinkish or reddish color, or equivalent erythematous spots or patches, accompanied by sensations of stinging, pricking, itching or burning.

Symptoms.—The affection generally runs an acute course. Sometimes in the beginning there is a mild fever, slight headache and coated tongue with some gastric disturbance. These evidences of mild constitutional disturbance are, however, often absent, the disease beginning by the sudden appearance of wheals or their equivalent lesion. The size of these varies within very wide limits, but they are generally not larger than a finger-nail. Sometimes patches of various size will form from a coalescence of the individual lesions. In appearance a wheal consists of a circumscribed efflorescence with a slightly elevated, whitish centre and a surrounding red areola. They may have a pinkish color and occasionally present a variegated appearance. Their shape is generally oval, but an irregular or band-like form may be assumed. The eruption may consist only of elevated or non-elevated erythematous bands, or patches of œdematous tissue. A common variety is known as papular urticaria or lichen urticatus. Papules that are flat or pointed, of a bright red color, with their central projecting part whitish, suddenly appear and act in the same manner as wheals. They are situated around follicles and occur over the surface of the body, especially on the extremities. They are most frequently observed in children who are ill nourished or have an acid dyspepsia. Owing to the great amount of itching that accompanies them the children scratch the skin vigorously, tearing off the apices of the papules, causing hæmorrhage and leaving a blood-crust that remains after the urticaria has disappeared. Such spots are frequently seen over the bodies of poorly nourished children and always

show that an urticaria has existed previously. It also sometimes happens in children, that, partly due to the œdema of the tissues, and partly to irritation from scratching, various crops of papulo-vesicles will form, presenting somewhat the appearance of herpes when the hyperæmia has left the tissues and the vesicles remain. Another variety is that in which, after ordinary wheals have formed they are replaced by bullæ from excessive exudation from the bloodvessels. This is called urticaria bullosa and is of rare occurrence. At times the blebs may be so large as to simulate the appearance of pemphigus. Still rarer is the form known as urticaria nodosa, or tuberosa, in which the wheals appear as tubercles, varying in size from a walnut to an egg; situated in the skin and subcutaneous tissue and scattered over the body. This form bears some resemblance to erythema nodosum. The nodules usually disappear in a few hours. In whatever of these different forms the wheals may appear certain symptoms generally accompany their development. There is a sensation resembling the sting of a nettle, namely, a hot tingling or stinging of the skin. The scratching that this involuntarily induces is apt to cause still further irritation. The eruption occurs suddenly and may as quickly disappear. Sometimes the wheals after remaining for a few hours on one part of the surface of the body suddenly disappear and others show themselves on some distant part. From the first the whole surface of the body may be attacked; again, at times, only certain regions are invaded. The mucous membranes are not exempt from attack.

Individual wheals are very evanescent in character, disappearing usually in a few hours. They are often accompanied by considerable œdema, or occur as œdematous erythematous patches alone, especially on the face; they may produce much swelling, causing closure of the eyes and considerable disfigurement (urticaria œdematosa); at times neighboring wheals coalesce, producing a deep, burning pain, which, with the accompanying swelling, presents an appearance somewhat suggestive of erysipelas. Within a few hours or days an attack terminates by the disappearance of the wheals together with the subjective

sensations of itching and burning. There is always a liability to a return of the disease. Urticaria sometimes occurs in connection with other diseases, such as measles, pertussis or scarlatina. It is sometimes secondary to scabies. It also occurs occasionally in connection with purpura, presenting the appearance of wheals with petechiæ. Whenever, for any reason, the cause of the disease persists, it assumes a chronic character. This condition is particularly seen in weak children placed in unfavorable hygienic surroundings. They are rarely free from the eruption, as evanescent wheals continue to appear for an indefinite period. The persistent scratching of the patient also keeps irritating the eruption and may to a certain extent modify its nature. Urticaria perstans is a form of the disease that has been desscribed, in which the wheals and the accompanying hyperæmia persist for a longer period than usual. Reddish macules also remain for some days after the wheals have disappeared.

Anatomy.—The vaso-motor nervous system and the muscular fibres of the skin are probably the principal factors in the production of the wheals. The cause of the disease acts by irritating the sensitive nerves of the skin and producing a spasm of the vessels; this is rapidly followed by their paralytic dilatation with effusion of serum. This inflammatory exudation takes place particularly into the papillary layer of the corium. There is hyperæmia and dilatation of both the superficial and deep vessels of the corium. In consequence of the exudation, the circulation of the blood in the overfilled vessels of the wheal is interfered with; the blood is pressed outward to the periphery, forming the surrounding red areola and leaving the pale anæmic œdematous centre.

Etiology.—The disease is neurotic in character and the vaso-motor disturbance may be the result of either direct irritation or reflex action. Although particularly apt to develop in subjects affected by uncleanliness and poor hygienic surroundings, it may occur in persons living under the most favorable conditions, but possessing a delicate and sensitive skin. Among the external sources of the disease may be mentioned the bites of certain insects, as mosquitoes and bed-bugs, the sting of the

nettle and jelly fish, excessive and irritating clothing, and very hot weather.

The internal cause that is most frequently found is some disturbance of the gastro-intestinal tract. Excess in any rich variety of food or wine may bring out the eruption, while almost any article of diet may by individual idiosyncrasy develop the rash. Shell fish, oysters, crabs, lobsters, pork, porridge and strawberries may be especially mentioned in this connection. Certain medicinal substances not infrequently case urticaria, as turpentine, copaiba, iodide of potassium, quinine, hydrate of chloral, salicylic acid and salicylate of soda. Intestinal worms occasionally cause the affection in children, although even when worms are present the rash is probably generally dependent on the catarrhal condition of the intestinal tract so frequently existing at the same time. Lastly, uterine disturbances and mental emotions occurring in nervous and excitable individuals may bring out the eruption.

Diagnosis.—The recognition of the disease depends on the subjective sensations of burning and itching, the rapidity of formation, the characteristic evanescent appearance of the wheals and their disappearance without desquamation. The principal affections to be differentiated from urticaria are erythema simplex and erythema multiforme. In the former disorder the patches of hyperæmia are larger and more diffuse than occur in urticaria, while the entire absence of any spots of elevation with a whitish centre marks a constant distinction between the two diseases. By bearing in mind the pathological difference between erythema simplex and urticaria, the former being a simple hyperæmia while the latter consists of an inflammatory exudation, the distinction between the two affections will not usually be difficult. Erythema multiforme sometimes bears a close resemblance to urticaria. The rash of the former affection, however, is more stable in character, the patches of inflammation lasting longer and being more compact in form and color. While there are never any wheals in erythema multiforme the eruption may take the form of variously sized flat papules, of a violaceous or bright, red color. These, however, are not so evan-

escent as the wheals of urticaria, usually lasting from one to two weeks, and are not accompanied by much itching and burning.

Again, the patches of erythema multiforme assume a great variety of shapes, as erythema annulare, iris and marginatum, all of which assist in the diagnosis. Urticaria tuberosa sometimes resembles erythema nodosum, but the nodules in the latter affection are not usually accompanied by itching, are very painful to the touch, and have a longer duration. Sometimes when several wheals coalesce, especially on the face, causing much swelling and burning, urticaria may be mistaken for erysipelas, but the evanescent character of the eruption, its rapid formation, the absence of a starting point, the intolerable itching and absence of the constitutional symptoms of erysipelas should prevent such a mistake in diagnosis.

Prognosis.—While urticaria is at times quite distressing to the patient it is never accompanied by danger to life. In fact most of the constitutional effects are due to the accompanying gastro-intestinal disturbances. The acute variety rarely lasts more than a few days, but is liable to relapses, if the previous exciting condition should again exist. The chronic form persists until its exciting cause is removed.

Treatment.—In conducting a case of urticaria reference must be had to general and local remedies. The general treatment of any case must depend upon the nature of the attack and its cause. If by the idiosyncrasy of the patient any particular article of food causes the eruption, an emetic should be given before it leaves the stomach. In cases in which the patient is not seen sufficiently early for this, a saline laxatine, such as epsom or rochelle salts, should be administered. In all cases a very careful inquiry into the diet must be instituted. There is often an undue condition of acidity present in the gastro-intestinal tract which is to be counteracted by alkalies. The bicarbonate of sodium or potassium in ten to thirty grain doses, the subnitrate of bismuth and the alkaline mineral waters are here of service. The salicylate of sodium in five grain doses repeated every few hours will often give speedy relief. The sulphate of atropine has been recommended in order to pro-

duce a paralysis of the vaso-motor centres. If prescribed, it should be administered until the eruption disappears or its physiological effect is produced. All stimulating articles of diet should be avoided, and food of the simplest kind taken. When the disease assumes a chronic form a careful investigation into the condition of the system that permits the continuance of the attack should be made. If the rheumatic or gouty diathesis exists alkalies and colchicum must be given. The dietary of the patient must be rigidly inspected and any irritating article of food excluded. In females the condition of the uterus and ovaries should be ascertained. Frequently a very slight cause will be found sufficient to keep up this (an urticarial) condition. Among the drugs that have been recommended for their more or less specific action may be mentioned muriate of ammonia, arsenic, belladonna, chloral and bromide of potassium. Much may be done by local treatment to relieve the unpleasant sensations produced by this affection. Alkaline baths made with the bicarbonate of potassium, the carbonate of sodium and borate of sodium often give relief. From one to four ounces of these salts may be added to an ordinary bath containing about thirty gallons of water. Bran baths at times may do good service. In some cases acid lotions give satisfactory results. The itching surface may be sponged with a solution of citric or acetic acid, or with ordinary vinegar and water. I have seen excellent results from the use of lemon juice in cases where internal treatment by alkalies, belladonna and bromide of potash was of no service. If a bath is desired about half an ounce of nitric and muriatic acids may be added to thirty gallons of water. Carbolic acid is sometimes used with good results in relieving the itching, from one to three drachms being added to a pint of alcohol and water. A serviceable ointment is made by adding a drachm of camphor and chloral to an ounce of the ordinary rose ointment. In connection with local treatment all irritating articles of apparel worn next to the skin must be removed. The patient should sleep upon a hard mattress, with light bed coverings, and in a well ventilated room.

Urticaria pigmentosa.—In connection with urticaria mention is to be made of a rare form of eruption which has been designated urticaria pigmentosa and xanthelasmoidea. It makes its first appearance (in the cases so far reported) before the third year of life, and is characterized by the presence of papules, tubercles or wheals of a pinkish, reddish or yellowish brown color, which last a few days or weeks, and are followed by buff-colored, brownish, yellowish or greenish pigmented spots. The spots may be few or numerous and scattered over the whole body, or limited to certain parts. They do not desquamate. The skin of the whole body is very sensitive and wheals are easily produced by scratching the skin over the spots or in other situations. The pigmented spots are always elevated and there is thickening of the skin of the part. The eruption is most frequent in warm weather.

The pathology of the disease is not known. By some it is regarded as a special disease, and by others as a chronic urticaria, the chronicity of the vascular changes accounting for the pigmentation and thickening of the skin. The proper mode of treatment is not yet settled.

LICHEN PLANUS.

Definition.—A chronic circumscribed inflammatory affection of the skin characterized by the formation of discrete or aggregated, dull red, roundish or angular, elevated, smooth, shining umbilicated papules generally seated upon the anterior surface of the forearms just above the wrists.

Symptoms.—This form of eruption was first described by Erasmus Wilson, and consists of papules remarkable for their color, shape, tendency to arrangement in groups, situation, local and chronic character, and the pigmentation they leave when they subside.

Color.—The color of the papule is a dull red, more or less vivid and suffused with a lilac tinge, which is most characteristic in recently formed and discrete papules; while in aggregated papules and in those of long standing it is of a duskier

hue. A slight hyperæmic areola is present at the base of recent papules.

Shape.—When very small the papules are roundish in shape, but when fully developed they are generally angular in outline and rise abruptly from the normal skin. They range in size from one to three or four lines in diameter, are but slightly elevated above the general level of the skin, and have a flat, smooth, shining surface, which is frequently depressed in the centre—umbilicated. The papules are covered on their surface by a thin layer of horny, transparent cuticle, which is not a scale, and neither separates nor exfoliates (Wilson). When the papule subsides this layer disappears without exfoliation. If the eruption is diffuse and aggregated there is some desquamation and scaling, especially if the part has been irritated, and appearances somewhat resembling a small diffuse patch of lichen ruber or of chronic, dry, scaly eczema or psoriasis. Upon the removal of the thick adherent scales in these cases the skin beneath may present an excoriated surface.

Arrangement of the papules.—The papules are either discrete or aggregated, but generally show a tendency to form larger or smaller groups. . Occasionally they are arranged as broader or narrower, longer or shorter bands. In the discrete form of eruption the papules arise successively, and after a time variously sized patches are formed, consisting of aggregated and discrete papules united by an inflamed and infiltrated base. The inflammation and infiltration cause a blending of the papules and interpapular skin, and the formation of a raised, thickened, scaling patch. The eruption spreads peripherically by the formation of new papules at the same time that the older papules disappear, leaving behind a dark pigmentation. A single papule may spread by peripheral growth until it has reached, say, the size of a split pea ; but a large patch is never formed by peripheral growth of a single papule, as occurs, for instance, in psoriasis. Sometimes a patch is large enough to show a raised border and depressed centre, or a ring is formed by the formation of a chain of papules at the periphery of a patch. If neighboring rings coalesce the eruption at that place

will assume a gyrate form. A patch may consist of a depressed and pigmented centre; external to this large, well-developed papules, and a periphery formed of small developing papules.

Situation.—The eruption is generally symmetrical, and appears especially upon the anterior surface of the fore-arms, just above the wrists; it may, however, appear upon any other part of the body, and especially upon the lower part of the abdomen, the calves of the legs, and around the knee. It has even been observed upon the palms of the hands and soles of the feet, upon the penis, and on the mucous membrane of the mouth and fauces.

Course.—The course of the eruption is very chronic, and the individual papules may remain unchanged for many months before undergoing a retrograde process. When they disappear they leave behind deep pigmentation and occasionally a slight atrophy. When removed by treatment, it has been observed that old papules leave behind more pigmentation than recent ones. The eruption never appears in the form of vesicles or pustules. The hairs and nails remain unaffected in this disease. There is generally very little itching attending the eruption, but sometimes it is intense. The general nutrition of the body is never affected; no matter how long the eruption lasts, it does not produce any of the grave conditions observed in lichen ruber, owing probably to its not becoming general over the whole body.

Anatomy.—In fig. 30 is represented a vertical section of a recent papule of lichen planus, together with normal skin at both sides. The papule corresponds to the region occupied by the dense round cell collection in the papillary region and upper part of the corium (*d*). The corneous layer in the region of the papule is almost entirely absent, consisting only of one or two layers of dried, flat, horny cells. The absence of the corneous layer in this situation was observed in all the sections of both recent and old papules examined, and consequently was not an artificial condition from cutting or manipulation of the sections. Outside the papule region the corneous layer is of normal appearance and thickness, as seen in fig.

30 *a*. The rete mucosum is thickened in some places, especially in the central portion of the papule area. Papillæ are not recognizable in the central part of the papule. The papillæ and upper part of the corium are occupied by a sharply limited dense collection of round cells (*d*). At the periphery of this collection the bloodvessels are dilated and crowded with corpuscles, while a considerable number of emigrated white blood-corpuscles are present directly around the vessels. The deeper portion of the corium appears normal, except that some of the bloodvessels are dilated and surrounded by a few emigrated corpuscles. Examining such a

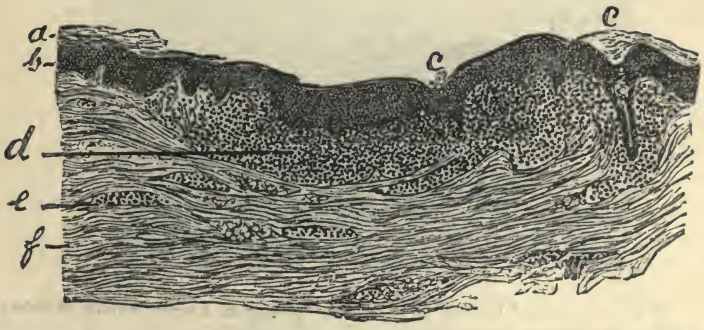


FIG. 30.—Complete section of a recent papule of lichen planus under a low magnifying power. The section includes normal skin at both sides, but most at left side : *a*, corneous layer ; *b*, rete mucosum ; *c*, orifice of sweat duct ; *d*, round cell infiltration ; *e*, bloodvessel ; *f*, corium.

section with higher powers, the rete is found to be hypertrophied in the central portion of the papule, and especially in the region of the sweat-ducts. The cells of all the layers over the dense round cell collection in the corium are flattened in a horizontal direction, the amount depending upon the amount of pressure from below, as shown by the almost normal condition of the cells toward the periphery of the papule. The granular layer is much thicker than usual, consisting sometimes of five or more layers of cells where the rete is thickest. This hypertrophy of the rete is very variable as to situation and extent. Generally it is greatest in the centre of the

papule and in the region of the sweat-duct orifices, but may occur in the latter situation only. In many places within the area of the papule there is no appreciable hypertrophy, and in the earliest stage of the eruption it is entirely absent.

The cutis papillæ in the central portion of the papule are so infiltrated with cells and the rete so flattened that in some cases the line of separation between the rete and cutis is not recognizable, as is the case in figs. 30 and 31. If the cell col-

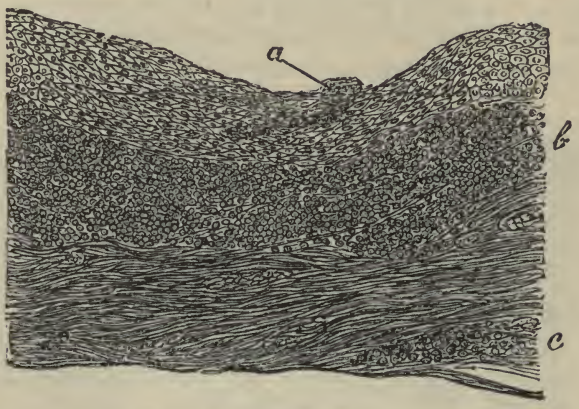


FIG. 31.—Vertical section of the central portion of a recent papule of lichen planus: *a*, orifice of sweat-duct; *b*, round cell collection; *c*, region of a blood-vessel.

lection is not very dense the papillæ will be observed to contain dilated bloodvessels. At the outer portions of the papule the papillæ contain a more or less dense collection of round cells and dilated bloodvessels. The cell infiltration into the papillæ and upper part of the corium consists of embryonic corpuscles (white blood-corpuscles) which take the place of the connective tissue to a greater or less extent. At the outer portions of the papule connective-tissue bundles are still present, but in the central part, when the collection is very dense, all trace of connective tissue is lost. In the deeper parts of the corium there is nothing abnormal except the presence of a few dilated bloodvessels, some of which are surrounded by emigrated corpuscles.

The hair-follicles and sweat-glands are normal, except that around the sweat-ducts the cell infiltration generally extends deeper than in other parts. In all of the papules examined a sweat-duct was found near its centre, and seemed to be the principal cause of the umbilicated appearance of the papules, as its presence prevented the pushing upward of the epidermis by the round-cell collection. This umbilical appearance was also partly owing to the absence of so much of the corneous layer from the central portion of the papule. The hair-follicles had no influence in determining the situation of the papules.

From the foregoing observations the papules of lichen planus examined by me owed their origin to an inflammatory process occurring in the papillæ and upper part of the corium, as shown by the round-cell infiltration and the changes in the tissues of the part. The changes observed in the rete and corneous layer are variable in amount and extent, and can be regarded as secondary conditions depending upon the changed nutrition condition in the cutis. If the papule is of long standing there may be considerable hypertrophy of the rete and corneous layer, as shown by the observations of Dr. Crocker, and further substantiated by the scaly appearance of some patches of the eruption. The dense cell infiltration, by its pressure upon the papillary bloodvessels and interference with their circulation and nutrition, allows of the passing out of red blood-corpuscles, as occurs in the dense cell infiltration in connection with syphilitic papules. As a result of this extravasation we have the dark red color, and pigmentation remaining after disappearance of the papules. In the return to the normal condition the changes are such as usually occur in inflammatory states, the round-cell collection disappears by fatty degeneration of the corpuscles and the epidermis regains its normal activity.

According to the above description, lichen planus papules are the result of a circumscribed inflammation of the papillæ and upper part of the corium, and any changes in the epidermis are secondary to the changed nutrition, the result of this localized inflammation.

Etiology.—The cause of the affection is obscure. According to Wilson it is generally associated with constitutional disturbance depending upon digestive disorders. In many of the cases there is general debility from improper nourishment or over-work. T. C. Fox believes it is neurotic in origin, as shown by the symptoms of nervous debility and disturbance of the sympathetic system of nerves present in many cases. It is met with at all ages, but is most frequent during middle life.

Diagnosis.—It may be confounded with eczema papulosum, or with the papular syphilide. In some cases of papular or follicular eczema, especially when seated on the forearms and legs, there is the greatest resemblance to lichen planus. Many of the papules are dark colored, elevated, shining, and have a depressed centre. They, however, itch considerably, are very variable in size, ranging from that of a pin-point to a pin-head, or larger, are roundish, and some have a little serum at the apex. They also appear and disappear much more rapidly than the papules of lichen planus, and do not leave such deep pigmentation behind. The papular syphilide is diagnosed by the pointed shape of the papules, their round form, the absence of the perpendicular margin, the general distribution, and the polymorphous character of the eruption.

Prognosis.—The prognosis, as regards the ultimate result, is always favorable, the disease, although very chronic in its course, having a tendency finally to spontaneous disappearance.

Treatment.—The treatment is both general and local. Many of the cases of lichen planus are in persons with the symptoms of so-called nervous debility, the result of derangement of the digestive organs, or from over-work, improper food, impure air, or mental anxiety, and this condition of general nutrition must be remedied by appropriate treatment. The mineral acids, alkalies, quinine, iron, cod-liver oil, etc., and proper nourishment should be ordered according to the special indications in individual cases. With special reference to the skin affection, if the eruption is general and the hyperæmic factor considerable, alkaline diuretics are indicated. Of these, acetate of

potash, with sweet spirits of nitre, given after meals and well diluted with water, is the best. Mercurials are of benefit in the more chronic forms. Arsenic should not be given in this disease, as it frequently aggravates the eruption. Chlorate of potash, given in the dose of twenty grains dissolved in four ounces of water, given fifteen minutes after meals and followed fifteen minutes later by twenty drops of dilute nitric acid in a wineglassful of water, has caused rapid improvement in some cases (Taylor). The local treatment consists in endeavoring to allay irritation and to promote absorption of the inflammatory products. To allay itching the same means are to be employed as for this condition in other diseases. Alkaline baths with bran, and subsequent rubbing of the body with vaseline or zinc salve containing carbolic acid, or vapor baths, may be employed. Generally local applications have no influence upon the course of the eruption, consequently our chief reliance is upon the internal treatment, so conducted as to bring the whole system into a normal physiological condition.

LICHEN SCROFULOSUS.

Definition.—A chronic inflammatory disease, limited to the hair follicles and perifollicular papillæ, occurring in scrofulous individuals, and characterized by the formation of millet to pin-head sized, pale, red, yellow, or reddish-brown, somewhat elevated, slightly desquamating, non-itching papules.

Symptoms.—The eruption is most frequently seated upon the abdomen, breast, or back, but may occur also in the inguinal region and upon the extremities, and, in the case of children, also upon the face and scalp. The papules composing the eruption may develop gradually and successively, or more or less simultaneously; they reach their acme of development quickly, remain in this fully developed condition a long time, and finally disappear, leaving the skin normal, pigmented or atrophied. Generally the papules at the commencement of the eruption form variously sized groups, which later may coalesce and give the skin a dirty brown, reddish color and

scaly surface. Instead of forming groups, the papules are sometimes arranged in circular lines, or are irregularly distributed over the surface. The individual papules are very uniform in size, ranging from that of a millet to a pin-head, are never much elevated above the general surface, and are of the normal color of the skin, or of a reddish, yellowish, or reddish-brown color. They are not very firm to the feel, and their apex is covered with a thin, slightly adherent scale, or more rarely contains a little pus. The papules disappear by absorption, the lesion becoming gradually paler, and flatter and flatter, accompanied by scaling. The disease is slow in its development and chronic in its course, being prolonged for years by the successive development of new papules, which in turn undergo absorption. When they no longer continue to form, the eruption soon disappears.

The eruption is sometimes combined with acne pustules situated between the papules or on other parts of the body, and in severe cases, eczema of the genital region is a frequent complication. Brown pigmentation of the skin of the face resembling ordinary chloasma, and appearing and disappearing at the same time as the lichen, has been observed in some cases.

Persons with lichen scrofulosus are always of a scrofulous constitution and the eruption is generally accompanied by some of the usual manifestations of this disease, as enlarged lymphatic glands, especially those of the sub-maxillary, cervical and axillary regions, or periostitis, caries, necrosis, cutaneous ulceration and a condition of general mal-nutrition.

Anatomy.—Each papule corresponds to a follicular orifice and the immediately surrounding papillæ. The papule is formed by cell infiltration and œdematous swelling of the peri-follicular papillæ and the central scales or pustule in or upon the apex of the papillæ arises from the collection of hyperplastic epidermic cells or exudate in the orifice of the follicle. The cell infiltration takes place first around the bloodvessels and into the connective tissue at the base of the hair follicles and sebaceous glands, and later they collect in large numbers around and within the glands. The number collected within the glands

may be so great that in the sebaceous glands the epithelial cells of this structure become pushed out from the orifice of the duct, and in the hair follicles the root sheaths become separated from the follicle sheaths. Later the glands become dilated and all infiltration occurs in the peri-glandular papillæ. The exudation cells subsequently either degenerate and become absorbed, leaving the part in a normal condition, or they break down in the centre of the mass and form an abscess, in which case the follicle sheath becomes separated from the hair shaft, the hair falls out, the surrounding connective tissue undergoes mucoid degeneration, the follicle is destroyed, the peri-glandular papillæ partly atrophy, and finally flat cicatrices, similar to those in acne, result (Kaposi).

Etiology.—The disease is very rare in this country. It is more frequent in children than in adults. It may appear as early as the second year of life. Hebra never observed it in persons over twenty-five, but Neumann saw one case in a person thirty-three years of age. Persons with this eruption are never otherwise perfectly healthy but always show other signs of a scrofulous constitution, and the eruption itself is to be regarded as a scrofulide.

Diagnosis.—The eruption may be confounded with papular eczema ; a small papular syphilide ; lichen ruber or keratosis pilaris. In papular eczema the papules are often arranged in groups or lines as in lichen scrofulosus ; but they develop rapidly, are very irregular in size, are more elevated, are of a bright red color, itch intensely, dry to small scales on the summit, and, if numerous, some vesicles will be present.

In the small papular syphilide the papules are of a dark red color, are distributed over a large area, have a more rapid course and are accompanied by other symptoms of syphilis. They are hard, shining, elevated, grouped or arranged in circles or lines and vary in size from a pin-head to that of a lentil, a variation not met with in lichen scrofulosus.

In lichen ruber the dark red color, the elevation, the absence of grouping, and the gradual extension over a large area make the diagnosis easy.

In keratosis pilaris the papules are not grouped, they are not so firm, have more scaling, and are situated especially upon the extensor surfaces of the extremities.

Prognosis.—The prognosis is very favorable, the eruption can always be removed and relapses prevented. If untreated the lesions remain a long time stationary without affecting the general system, and finally disappear spontaneously. When it is complicated with acne cachectorum it is more difficult to cure, and cicatrices will result from destruction of some of the follicles.

Treatment.—The treatment is that for scrofula in general and consequently need not here be fully described. Cod-liver oil in large doses with or without iron, hypophosphites or other anti-scrofula remedies in addition will always effect a cure. The external application of cod-liver oil, rubbing it well into the skin twice a day, the patient wearing closely fitting flannel underclothes during the course of external treatment, to protect the outer clothing, will hasten the cure. The general nutrition must be attended to; plenty of good food, especially meat, pure air, moderate exercise and so on; that is, those things which tend to improve the general nutrition of the body.

PRURIGO.

Fr. Eq.—Strophulus prurigineux. (Hardy).

Definition.—Prurigo is a chronic affection characterized by small pin-head sized, pale or slightly red, solid papules situated in the skin, and accompanied by a most intense pruritus; the integument itself in time becoming thickened and pigmented.

The itching of the skin observed in old age, that due to dyspepsia, albuminuria, icterus, amenorrhœa, is not prurigo; but a neurosis without preceding pathological change in the skin, and will be described under the head of pruritus cutaneus.

History.—Prurigo was not recognized as a distinct disease until the 16th century. It was confounded with eczema, scabies, and urticaria, even by such observers as Sauvages and Lorry.

Willan and his followers, and Cazenave, Alibert, and Bazin, all correctly depicted it; but by all of them pruritus due to phtheiriasis was included with genuine prurigo. To Hebra belongs the credit of giving the disease a definite place and an accurate history.

Prurigo has its home in Austria, and exists to a slight extent in other parts of the world. In Vienna, Hans Hebra met recently forty cases during a single year, whilst in France it is extremely rare, and in England and America is practically unknown.

The disease possesses not only a well-defined clinical history —but a perfectly clear pathological anatomy—and is to be sharply distinguished from the other two itchy affections, pruritus and pediculosis, with which it is even to the present day confounded.

Symptoms.—Although prurigo is not a congenital disease, its manifestations almost invariably begin very early in life. Even during the first year it is noticed that there are times when the child is very irritable and restless, and scratches itself violently; in fact, suffers from the symptoms of a recurrent urticaria.

It is probably well on into the second year before the symptoms of the disease begin fully to develop themselves and the characteristic eruption appears. This is seen as very small and but slightly prominent papules, which may be evident to the touch before they become visible to the eyes. In size they vary from a pin's head to a hemp seed; in color they usually do not differ at all from the normal skin, though they may be slightly pinkish or reddish. They are found upon the outer surfaces of the lower limbs, and especially upon the legs, the lumbar and gluteal regions, and the exterior surfaces of the upper extremities are also affected. The rest of the body is sometimes involved, but the axillary and popliteal spaces always remain free, and present in advanced cases, a marked difference from the surrounding skin. The little papules may be comparatively few, or they may be so numerous as to give the affected skin the feeling of a nutmeg-grater. They are never grouped—and many of them are sur-

rounded by a few minute dried epidermic scales or pierced by a hair.

This papular eruption constitutes the essential objective symptom of the disease ; for the other skin lesions, extensive and varied as they may be, are merely secondary.

The intense itching associated with the eruption soon causes the head of the little papule to be scratched off, and a minute drop of serum or of blood exudes, and dries up into a small crust. Extensive excoriations, blood crusts, and pustules soon result from the continuous use of the finger nails.

By the third year the disease may be fully developed. The secondary lesions almost entirely obscure the original eruption. Irregular excoriations and crusts of blood or pus cover various parts of the body ; the hair is torn out ; the inguinal lymphatic glands are swollen. In the course of time the skin becomes streaked or diffusely colored with a brown pigmentation of varying intensity ; a melasma exactly similar to that which occurs from scratching in any itchy skin disease of long standing. The skin is dry, rough, and grater-like ; it is thickened, and the natural lines and furrows are increased in depth. Eczematous processes are usually present to a greater or less extent in various places.

It is a curious fact that the inner surfaces of the joints—the axilla and front of the elbow—the groin and popliteal space—and the palms and soles, are always free ; their skin is white and soft—and there are never any papules upon them.

Two forms of the disease are recognized ; prurigo agria seu p. ferox, and prurigo mitis. They vary only in degree ; in p. mitis the original papular eruption, the itching, and the secondary lesions are far less marked than they are in the other form. Nor does the one degree change into the other ; a case of p. mitis always remains such to the end of the disease, and *vice versâ*.

Most of these patients are much better in summer, when the free perspiration greatly lessens the pruritus.

Besides the above-mentioned complications, buboes and lymphangoitis may occur.

Once established, the disease lasts with but slight change, for life. From time to time the secondary lesions vary in their intensity, or change their seat ; but in the original malady but little change is wrought by time—or, by therapeutic effort.

Pathology.—No very characteristic anatomical changes have been found to explain the marked and persistent local symptoms of prurigo.

On section through the papule of the eruption we see appearances exactly similar to those of an ordinary papular eczema. In the papillæ and rete there is a moderate collection of young cells and serous fluid. In chronic cases the ordinary secondary results of long standing chronic dermatitis are present, as thickening, proliferation of the rete, cell-infiltration and pigmentation of the corium, dilated lymph spaces, deformed or atrophied sweat and sebaceous glands with fatty degenerated epithelium, etc.

The appearances hardly explain the intense pruritus. Hebra supposes that pressure on the papillary nerves from the sudden appearance of a small quantity of serum in the papilla causes it at first ; but why should this symptom last for years, after the changes of chronic inflammation have come on, and not be present in cases like herpes, where far more fluid is exuded? The question is still unanswered. The disease is certainly not a neurosis as is pruritus, for a definite anatomical change always accompanies or even precedes its advent.

Etiology.—We possess no very definite knowledge upon this head. We do not know the cause of the disease, nor why it should be common in one country and almost unknown in other and neighboring ones. It occurs often in the poorer classes, among those who are exposed to hardships and are insufficiently nourished ; but it is occasionally seen among wealthier people. It is oftenest noticed in weakly, scrofulous children ; but sometimes in those that appear to enjoy the best of physical health. It occurs oftener among males than among females. Hebra remarks that cases of it are oftenest seen in foundlings and among the children of beggars, etc., and he believes that in a large proportion of cases the mothers were sufferers from

chronic tubercular lung troubles at the time of the child's birth. But the disease is never hereditary in the ordinary sense; though several members of a family are sometimes found affected.

No external influences of any kind, as clothing, food, baths etc., have, so far as we know, any direct influence upon its production, nor is it directly due to any general disease like scrofula or tubercle. It is in no sense contagious. So far as our present knowledge extends, prurigo is an idiopathic disease of the skin.

Diagnosis.—Prurigo presents the picture of a distinct and well-defined disease, and ought not to be mistaken for any other affection. Perhaps the malady with which it is most liable to be confounded is pruritus; but the points of distinction are manifold. Prurigo is extremely rare—almost unknown, in this country; pruritus is common. Prurigo is preceded by a characteristic eruption; pruritus may show papules, pustules, blood crusts, etc., but they are all secondary lesions. In prurigo the skin is harsh, thickened, and roughened; in pruritus it is, save when irritated, normal. Prurigo occurs upon the exterior surfaces of the limbs especially; pruritus over the whole body. Prurigo begins in infancy, is primary, and lasts for life; pruritus may occur at any time, is usually secondary to some well marked visceral condition, and is transient. Again, prurigo occurs in the lower and more badly nourished classes; pruritus in all classes. Finally, the buboes and characteristic whiteness and non-involvement of the flexor surfaces of the joints mark the more serious disease.

From urticaria it may be quite difficult to distinguish the affection, especially during its early stages in childhood. When the peculiar eruption appears, however, with its persistent papules and the cause of the disease becomes evident, no difficulty should be experienced.

In scabies, phtheiriasis, etc., there is much itching and there may be papules, excoriations, blood crusts, etc., but they are all purely secondary lesions.

Scabies is located on the trunk and around the genitals and in

the finger clefts; pediculosis on the trunk, especially where lie the folds of the clothing; prurigo upon the limbs. In both the itch and phtheiriasis the peculiar living cause or its remains will be round if carefully sought for.

Eczema may, and in severe cases usually does, exist in conjunction with prurigo, and in those cases the diagnosis may be very difficult. Of course the scratching, from the prurigo, tends to keep up the eczema in spite of all we may do for it. The situation of the eruption, the color of the papules, the presence of vesicles and of exudation on the free surface are sufficient for the diagnosis of an eczema.

Prognosis.—Hebra regards prurigo in general as an entirely incurable disease, and all authors agree that this is the case in p. agria, and even in p. mitis in adults. But Kaposi claims that the milder form actively treated in early childhood can be cured.

Hebra draws a very vivid picture of the lamentable fate of a man condemned from infancy to suffer from this most annoying disease; how in childhood he is constantly reproached and punished by his parents and teachers for his incessant scratching; in youth, ostracized from school and workshop; as an adult, compelled to renounce society and marriage. He cannot even enlist as a soldier. The malady has been known to cause its victim to commit suicide.

Treatment.—Although we cannot cure prurigo, we can do much to mitigate its symptoms. We may reject the internal medication formerly in vogue as absolutely useless, viz: calomel, tartar emetic, arsenic, colchicum, bleeding. Nor are there any valid grounds for believing that any special kind of food or the excessive use of salt meats, condiments or coffee, exercise any influence whatsoever upon it. External remedies only are to be relied on, and especially such as tend to soften the skin and remove the upper layer of the epidermis.

The most important of the agents is water, which may be used as shower, or vapor, or the ordinary hot bath. This, used daily and thoroughly, and especially used in conjunction with soft soap, is perhaps our most effective mode of treating the

symptoms of prurigo. Sulphur baths, either natural or artificial, are also sometimes very serviceable.

The tars; ol. cadini, ol. rusci, either alone or in conjunction with olive or cod-liver oil, are useful in many cases; they may be employed after the warm baths.

In the early, urticarial-like stages, the thorough use of sulphur or tar soap—or immersion for an hour or more occasionally in a bath of strong soapsuds—followed by the inunction of any bland oil, usually suffices.

Hebra very strongly recommends Wilkinson's ointment:

℞.—Sulphuris Sublimati,
Olei Cadini, āā ʒ ii.
Cretæ Preparata, ʒ iiss
Saponis Viridis,
Adipis, āā ℥ i.
M. Ft. Mist.

It is to be applied every night for six to ten days, the patient sleeping between blankets; at the end of that time a warm bath is to be taken.

Corrosive sublimate baths, ʒ i. to a large bath-tub; ordinary alum, one pound to the bath, have also occasionally been successfully employed.

Kaposi has obtained excellent results from the use of naphthol—so excellent indeed as to render it perhaps the first in the list of palliative agents which we can employ. It is to be used as a five per cent. ointment for adults; a one-half per cent. ointment for children.

Complications, among which eczema stands pre-eminent, must be treated by the recognized methods.

Finally, ol. morrhuæ, alone or with one-tenth per cent. of sodium in scrofulous patients, and the best of nourishment and general hygiene in all, are to be employed.

In this way we may greatly mitigate the sufferings of patients with prurigo, and even render the disease quiescent for months at a time; but we may be very sure that sooner or later its symptoms will return.

HERPES.

Definition.—An acute, non-contagious inflammatory eruption of definite course, and characterized by the formation of pin-head to pea-sized vesicles arranged in groups upon an erythematous base, and situated on regions having a direct relation to the peripheral termination of certain cerebro-spinal nerves.

Symptoms.—The outbreak of the eruption is generally preceded for a longer or shorter period by a burning or stinging pain, which is sometimes intense in the part to be attacked. This pain continues long after the eruption has disappeared, or as is usually the case, diminishes in intensity or subsides after the eruption has lasted a few days. The disease makes its appearance in the form of one or more groups of small elevated papules situated upon an erythematous base. In a few hours the papules become vesicles, and these afterward become pustules. The lesions of a group are usually of the same age and in the same stage of transformation to vesicles or pustules, but the lesions of all the groups are not necessarily, in fact are rarely, of the same age and appearance. The vesicles or pustules rarely burst, and the contents drying to yellowish, or dark crusts, which afterward fall off, leaving the skin beneath at first reddish and subsequently normal. Cicatrices rarely result, except in those cases in which the lesions are hæmorrhagic in character.

According to the situation, arrangement and cause of the eruption, the disease is divided into herpes febrilis, h. iris, h. progenitalis, h. gestationis, h. zoster. They require separate consideration.

HERPES FEBRILIS.

Syn.—H. labialis ; h. facialis ; hydroa febrilis ; fever sores.

Definition.—An acute eruption of one or more herpetic groups of vesicles situated upon the face, and accompanying febrile conditions of the system.

Symptoms.—The eruption is most frequently met with upon the lips at the junction of the cutaneous and mucous surfaces, and

upon the alæ nasi, but may occur upon other parts of the face, as forehead, lids, cornea, ears, chin, cheeks and mucous membrane of the mouth and tongue. It commences in the manner already described as peculiar to herpes in general, and consists of one or more groups of vesicles varying from a pin-head to a pea in size, which, after becoming pustules dry up in from two to four days and form crusts which soon fall off, leaving a red skin beneath, which soon becomes normal. The vesicles of a group are of the same age and rarely rupture unless the eruption is seated on a mucous membrane, when the covering becomes detached and the spot presents an excoriated surface, covered with more or less purulent exudation. The vesicles of a patch may remain discrete or may coalesce, forming small bullæ. The eruption is sometimes symmetrical and is met with in acute catarrhal conditions of the upper air passages and in some other febrile conditions, as pneumonia, typhus fever, etc. It is met with in affections which are ushered in with a chill, and this chill process is supposed to have some close connection with its cause. The eruption itself has no prognostic significance, as it occurs in both mild and grave conditions. Relapses are very frequent.

Pathology.—According to Baerensprung it is to be regarded as a mild form of zoster, and as resulting from irritation of peripheral sympathetic ganglia. According to Gerhardt it is caused by dilated small arteries pressing upon the trigeminus and sympathetic fibres as they pass through the bone canals.

Diagnosis.—It resembles in many respects an acute eczema, but the grouping of the lesions, their similarity in age of the vesicles of a group, and the definite course of the eruption sufficiently distinguish the eruption.

Treatment.—Treatment is generally not necessary. The burning may be relieved by the application of zinc ointment, rose ointment, or cold cream.

HERPES IRIS.

Definition.—An acute inflammatory eruption consisting of vesicles or bullæ arranged as a single, or as several concentric circles.

Symptoms.—This eruption is perhaps identical with erythema multiforme, and occurs usually upon the backs of the hands and feet. It is symmetrical in distribution, and arises as a single vesicle which, after one or two days, sinks in, and new vesicles form in a circle at its periphery. If the central vesicle has undergone involution, the eruption will consist of a ring of discrete or confluent vesicles and a central pigmented spot—herpes circinatus. New rings of vesicles may again form at the periphery, and the patch finally consist of three or more rings of discrete or confluent vesicles, and be several inches in diameter. In this case the rings, on account of the difference in age, will exhibit differences in color—herpes iris. The vesicles of a ring are about the same size and contain yellowish or puriform liquid, which soon dries to crusts. The vesicles rarely rupture, hence the patch does not present a discharging surface. Sometimes the vesicles coalesce to form bullæ. The skin between them is raised and of a pinkish or reddish color. There may be only two or three patches, or there may be several. They disappear after one or two weeks, leaving the skin pigmented, but rarely desquamating. New patches continue to form during the first two or three weeks of the disease. It is liable to relapse.

It is met with in adults of both sexes, but is most frequent in young persons, and occurs chiefly in spring and autumn.

Diagnosis.—It may resemble tinea tonsurans, but the location, its symmetrical arrangement, and absence of fungi make the diagnosis positive. From herpes zoster it is distinguished by the symmetrical distribution, the arrangement of the vesicles, the absence of pain and the location of the eruption. In pemphigus the size of the bullæ, their mode of formation, their color and the course of the lesions are different.

Prognosis.—The prognosis is favorable, the eruption dis-

appearing after two or three weeks, though relapses may occur.

Treatment.—The general condition should be attended to. Tonics, especially quinine, are of advantage. Local applications are unnecessary unless the intensity of the inflammation should render antiphlogistics, as cold water applications, etc., necessary.

HERPES PROGENITALIS.

Syn.—Herpes præputialis.

Definition.—An acute inflammatory eruption of vesicles of herpetic character situated upon the male or female genitals.

Symptoms.—The mode of origin and arrangement of the vesicles correspond to that already described in herpes febrilis. The eruption, in the male, appears upon the prepuce, especially its inner surfaces, upon the meatus, in the sulcus, upon the margin of the prepuce and the adjoining integument.

In the female it occurs upon the præputium clitoridis, the labia minora, and adjoining portion of the labia majora. It commences with itching and burning, and consists of one or more groups of pin-head sized vesicles, seated upon an erythematous base. Usually only one group is present. The accompanying inflammation may be sufficient to cause considerable swelling and œdema of the part. Unless seated upon a cutaneous surface the vesicles frequently burst and serum is exuded upon the free surface. Excoriations frequently result from bursting of the vesicles, and the inflammation may extend to the urethra in the male, or the vagina in the female, producing a urethritis or a vaginitis. In a few days the vesicles dry to small crusts and the part heals. The contents of the vesicles may be pustular in character, or contain blood from hæmorrhage; in both these cases the lesions last a number of days, ulceration occurs and they heal by cicatricial tissue. Superficial ulceration is not infrequent when the lesions are seated on the inner surface of the prepuce, or in the sulcus, or on the posterior part of the glans.

The vesicles remain discrete, or coalesce, forming a patch

covered with a crust. The eruption may appear on one or both sides of the genitals at the same time.

Pathology.—Probably the eruption depends upon an inflammation or irritation of peripheral sympathetic ganglia. Some persons are attacked after every act of coition. All of the persons I have known to be so affected have been of an excitable or nervous temperament.

Prognosis.—The prognosis is favorable, although relapses are to be expected.

Treatment.—The part may be dusted with starch, bismuth or other drying powder, or borated absorbent cotton be applied to reduce irritation and prevent rupture of the vesicles. If they have ruptured the same means may be employed, or astringent applications, as a solution of tannic acid or acetate of lead, or an ointment of vaseline or oxide of zinc, be applied. For excoriations, calomel and bismuth, or iodoform and bismuth are useful. The part should be kept clean either by washing or allowing the urine to bathe it by grasping the prepuce and momentarily keeping the urine around the glans penis. After the disease has disappeared, the general condition should be attended to and the genital, cutaneous, or mucous surface hardened by the use of astringent solutions, as acetate of lead or tannic acid.

HERPES GESTATIONIS.

Syn.—Pemphigus hystericus.

Symptoms.—This form of eruption, which may be regarded as belonging to the herpetic or the pemphigus group of cutaneous diseases, is met with among pregnant women, and arises either before or after parturition.

I have seen two cases, in one the eruption always occurred after delivery, and in the other it occurred during pregnancy. It appears especially upon the extremities and commences by excessive itching which is soon followed by the formation of papules, or vesicles, or small bullæ. They are attended by considerable itching and burning sensations. The vesicles and bullæ are variously sized, ranging from that of a pea to

that of a walnut. Urticaria, neuralgia, general nervous prostration may accompany the eruption. Relapses are liable to occur at subsequent pregnancies. It seems to me to be more closely related to pemphigus than to herpes. It does not follow nerve tracks, and the vesicles are not grouped as in herpes.

HERPES ZOSTER.

Syn.—Zona ; ignis sacer ; zoster ; shingles.

Definition.—Herpes zoster is an acute inflammatory disease of definite duration and special course, characterized by the appearance of groups of vesicles situated upon inflamed bases, corresponding in location to the course of one or more of the cranial or spinal nerves, and accompanied by more or less neuralgic pain.

Symptoms.—The outbreak of an attack of zoster is usually preceded by certain prodromal symptoms. These consist of more or less febrile disturbance, with its accompaniments, together with neuralgic pains of varrying intensity in the skin-territory shortly to be attacked. The pains usually precede the eruption only a few hours or days ; but occasionally they are felt a month or more beforehand. They may occupy the whole area of the subsequent vesiculation—or they may be confined to a few points ; these being the well-known painful points of Romberg—so commonly seen in ordinary neuralgias; and corresponding to the origins of the cutaneous branches given off by the nerves. In many cases, however, the eruption itself is the first symptom of the disease.

The herpes begins with a localized reddening of the skin, upon which there soon appear groups of lentil-sized, brilliant red papules—which in the space of from a few hours to two days develop into vesicles varying in size from a pin-head to a split-pea. A marked sensation of burning accompanies the outbreak. The vesicles are usually discrete ; but if very numerous they may coalesce and form large irregular bullæ; they continue to appear in successive crops for from one-half to one week ; but those of each crop are of the same age.

After each group of vesicles has existed some three or four days, the clear watery serum becomes opaque, then purulent; and in from eight to ten days after the time of their appearance they have dried up into yellowish-brown crusts.

By the end of the first week the eruption has reached its height; by the end of the second week most of the crops have run their course and have become desiccated. In a short time the brownish crusts drop off, leaving a normal but slightly pigmented skin behind.

The number of herpetic groups corresponds to the severity of the disease. In mild cases there may be only one; in the severer ones the groups may crowd one another, and large skin territories be covered by confluent vesicles or pustules. The vesicles do not tend to burst as in eczema; they are situated deep in the skin, and unless interfered with, remain intact until they dry up.

As a usual thing the neuralgic pains and burning which were so marked in the beginning, subside when the eruption comes out. But sometimes they may persist; or even become worse, and remain for days, weeks or even years after the vesicles are entirely gone. The papules may on the other hand, never run their full course and become vesicles; they may disappear gradually, to be followed by a moderate desquamation. This last has been designated the abortive form of the disease; and in many cases the latest crops of the eruption will run their course in this manner.

Of rather rare occurrence is the hæmorrhagic form of the malady—*Herpes Zoster Hæmorrhagicus.*—In every severe zoster individual vesicles will have their serum stained reddish from hæmorrhage into them, but in this form of zoster the hæmorrhagic vesicle is the prevailing type. Such an eruption *may* terminate in the usual way—by desiccation; but more often the bloody vesicles burst, and the rete is exposed. As there is here always more or less destruction of the papillæ, by the hæmorrhages, the ulcerating surface heals by granulation and cicatrization. Such attacks are usually very severe, and it may be two or three months before healing is complete. This is the

only form of herpes zoster which causes scarring. Certain occasional sequelæ of zoster must be mentioned. They consist in persistent neuralgias of the part—or anæsthesias— or local paralyses—atrophy of the muscles—falling of the hair and teeth even. They are especially to be feared when the disease attacks old or debilitated individuals. Nevertheless, in the vast majority of cases the disease is a benign one, and runs a definite course.

Herpes zoster occurs but once in a lifetime. Few cases only have been reported in which it has attacked the same individual twice; and Kaposi's unique case has had up to 1882, eleven attacks. But these are the exceptions that prove the rule, and do not invalidate the general statement. It occurs at all ages. It is almost always confined to one lateral half of the body; but a number of cases of bilateral zoster are on record, especially upon the face and neck. Zoster is a fairly common disease, and occurs in both sexes and at all ages. It is seen oftener in winter than in summer.

In accordance with its location, or with the affected nervous tract, a number of varieties of herpes are described. Thus *Z. frontalis* occurs in the territory of the supraorbital nerve—the upper eyelid and forehead and scalp. It is very often hæmorrhagic. *Z. ophthalmicus* is one of the most painful and serious of all; conjunctivitis, keratitis, iritis, even panophthalmitis and destruction of the eyeball, with eventual phlebitis, pyæmia and death have been recorded. *Z. auricularis* affects the skin of the ear and the back part of the head. *Z. faciei* affects the lower lid, the side of the face, cheeks, and lips. When the skin of the lower jaw and neck are involved, difficulty of deglutition and violent toothache are common. Atrophy of the alveolar processes and falling out of the teeth have been observed. In all these cases the affection may be confined to the most limited nerve-distribution, and but a single limited group of vesicles appear: or on the other hand, several contiguous nerve tracts be involved, and the whole surface of the face and neck be covered by the eruption.

Z. occipito-collaris occurs in the region of distribution of the

occipitalis major and minor, the auricularis magnus and the subcutaneus colli, appearing on the posterior surface of the ear, the side of the neck and head, and the under surface of the chin. *Z. cervico-subclavicularis* corresponds to the region of the subclavicular nerves, and is seen upon the lateral portion of the neck and the shoulder. *Z. cervico-brachialis* is one of the commoner varieties ; the branches of the brachial plexus are affected, and the eruption occurs upon the shoulder, over the whole upper extremity—even at times to the tips of the fingers —and over the first and second ribs to the sternum. *Z. pectoralis* is the most frequent form of all ; the eruption then extends from the spinal column behind to the sternum in front over half the body, and including two, three or more intercostal spaces. In some cases, only the territory of individual cutaneous branches are affected. Pain and difficulty in respiration are often present, even before the vesicles appear, and may be mistaken for the signs of an incipient pleurisy ; in point of fact, pleurisy, as a complication or a cause, has been noted in this variety of herpes zoster.

Z. lumbo-femoralis corresponds to the first to fourth sacral nerves, and appears very much as the preceding variety does. It is seen upon the lumbar and sacral regions, upon the sides of the abdomen, the anterior and inner surface of the thigh to the knee, the scrotum, labia majora, etc. Finally, in *Z. sacro ischiadicus* and *Z. sacro genitalis* the disease affects the district animated by the last branches of the lumbar and by the sacral plexus, and is seen on the gluteal region, the perineum and the posterior surface of the scrotum, the anal region, labia, the lower part of the leg and foot. The labia minora and vestibule of the vagina may be affected, and upon the penis the disease is often strictly unilateral from the scrotum to the glans.

Anatomy.—Baerensprung was the first to connect zoster with disease of the nervous system. In a case observed by him, he found the spinal ganglia and intercostal nerve bundles corresponding to the seat of the eruption, swollen and reddened from inflammatory changes. Wyss, in a case of zoster facialis,

found the Gasserian ganglion softer, larger, of a bright red color, the nerve between the brain and ganglion surrounded by extravasated blood, and new soft tissue between the peripheral nerve fibres. Wagner found swelling and enlargement of the intervertebral ganglia, and fatty degeneration, and destruction of the nerve cells from inflammation, and new tissue formation in the part. Danielssen found only neuritis of two intercostal nerves, with cell infiltration of the neurilemma in a case examined by him. Kaposi found the bloodvessels of the ganglia distended with blood, a hæmorrhage around the ganglion, and destruction of some of the ganglion cells from the blood extravasation. He considers the disease may be of cerebral, spinal, ganglionic or peripheral nerve origin, as the eruption may be bi-lateral, semi-lateral, or limited to one or two groups of vesicles, which latter could only correspond to the peripheral distribution of a branch of a nerve trunk.

From the foregoing observations the eruption clearly depends upon a pathological condition of sensitive nerves or ganglia, either spinal, Gasserian or peripheral.

As regards the anatomical changes occurring in the skin at the seat of the lesion, Baerensprung found the papillæ enlarged, their bloodvessels dilated, and the tissue of the part infiltrated with new cells. This new cell infiltration extended to the corium and subcutaneous tissue. Spindle-shaped corpuscles were observed extending from the papillæ into the rete, separating the cells of the latter, and giving them an elongated form. A peri-neuritis with cell infiltration in and round the neurilemma was also observed.

In Fig. 32 is represented a perpendicular section of a young herpes vesicle from a case of zoster pectoralis.

In the earliest stage the exudation occurs in the rete, the epithelial cells of which are separated, and many of them drawn out to form bands, as observed at the margin of the vesicle in Fig. 32. The lacunæ formed by the elongated rete cells are filled with serum, and a few round cells. The vesicles frequently form around hair follicles. As the exudation within the vesicle area increases in amount, the rete cells become

more and more separated from each other, and finally are found in considerable number as isolated bodies in the exuded liquid. In the upper part of the vesicle many of the cells still retain their connection with each other, although their form has often

FIG. 32.—Vertical section of a vesicle of herpes zoster: *a*, corneous layer; *b*, rete mucosum; *c*, hair follicle orifices; *d*, base of vesicle; *e*, connective tissue of corium; *f*, muscle bundle; *g*, cell infiltration extending to base of vesicle.

been greatly changed. The corneous layer is elevated, but remains usually intact as the vesicles rarely rupture. The rete and corneous layer, except at the margin of the vesicles, become separated from each other by the action of the exuded liquid upon the rete cells. The vesicle itself is at first chambered by the elongated rete cells, but afterward becomes a single vesicle

containing rete cells, pus corpuscles and serum. At first there are but few pus cells, but their number gradually increases until the vesicle becomes a pustule. The base of the vesicle is at first formed by the lower strata of rete cells, but afterward is formed by the corium. All signs of papillæ in the vesicle area are absent. The surrounding corium and papillæ are infiltrated with round cells, and the papillary bloodvessels dilated. This inflammatory condition extends a considerable distance

FIG. 33.—Section of subcutaneous tissue in a case of herpes zoster: *a*, nerve bundle; *a'*, *a''*, branches of the nerve bundle *a*; *b*, bloodvessel; *c*, surrounding loose connective tissue.

in the papillary region, but not far in the corium or subcutaneous tissue. Passing upward from the subcutaneous tissue, there is a columnar-shaped area of tissue which is greatly infiltrated with round cells. In my specimens this area has corresponded to a hair follicle region. By observation of Fig. 32, especially of its base, it is seen that the mode of formation and results of the exudation differ considerably from that occurring in eczema.

Deep in the subcutaneous tissue, deeper than the inflammation producing the vesicles reaches, a round cell infiltration is observed within and around the neurilemma ; that is, there is a peri-neuritis. This cell infiltration can be observed to follow the course of the nerve bundles, as shown in Fig. 33. This drawing was made from the deep subcutaneous tissue, and the neighboring tissue was perfectly normal.

Etiology.—As already noted herpes depends on a pathological condition of the sensitive nerves or ganglia ; hence any thing that will cause irritation and inflammation of these structures may lead to the production of the disease. Atmospheric changes, sudden cold, sudden checking of excessive perspiration, direct injuries to the nerves, as from blows, etc., new growths, collections of pus, periostitis, pleuritis or inflammatory exudations, by pressing upon nerve trunks and irritating them may cause the eruption. The internal use of arsenic has been known to produce an herpetic eruption. The same has been observed from poisoning by carbonic oxide gas.

Diagnosis.—The diagnosis is to be made upon the history of the case, the pain, absence of itching, the grouping of the vesicles, and their tendency to dry up without rupturing. From the other forms of herpes it is known by its unilateral distribution, presence of a number of groups, the location, and the absence of relapses.

If the affected person has had within a few days a suspicious connection a guarded diagnosis should be made.

Prognosis.—The prognosis is favorable ; occasionally neuralgic pains, sometimes very intense in character, persist for weeks, months or years after the disappearance of the eruption. A second attack is not to be expected.

Treatment.—The treatment consists in protecting the inflamed skin, in subduing the pain, and if possible preventing subsequent neuralgia. If the vesicles have not burst the part can be protected by non-irritating powders, as lycopodium, starch, etc., by the use of absorbent cotton or by wearing cotton, linen or silk underclothing. If the vesicles burst antiseptic absorbent cotton should be used. For the relief of pain, anodyne lotions or

hypodermic injections of morphine, or the local application of a two to ten per cent. solution of oleate of morphine should be used. The ten per cent. solution of morphine should not be applied too freely to a raw surface, as it is easily absorbed. The use of the constant current is sometimes of service.

Internally, phosphide of zinc in the dose of a third of a grain every three hours has been recommended for the relief of the pain. Morphine may also be given internally. I have found the bromide of potash, and arsenic of decided value in quieting the patients and relieving the pain. Rest is of advantage, and should be recommended when possible, and they should lie on the side opposite to that affected in order to avoid increasing the inflammation.

PEMPHIGUS.

Definition.—Pemphigus is an acute or chronic disease of the skin, characterized by the successive formation of variously sized bullæ containing a clear or yellowish serous liquid and seated upon a slightly inflamed base.

Symptoms.—There are two varieties of pemphigus, viz. : pemphigus vulgaris and pemphigus foliaceus. The former, which is the variety usually met with, is either an acute or chronic disease, but the latter, which is very rare, is always a chronic affection.

Pemphigus vulgaris.—The symptoms, course of the eruption, the number of bullæ present, their situation and arrangement, vary in different cases. The disease is generally ushered in by a feeling of chilliness, headache, fever, etc., but it may appear without prodromal symptoms. The fever, when present, generally disappears with the abatement of the eruption, to reappear at the next outbreak of bullæ. In the majority of cases bright erythematous spots or wheals make their appearance at the commencement and during the course of the disease, and the bullæ arise on such places or upon previously normal skin. The eruption may appear upon the different parts of the body or upon the mucous membranes, but is most frequently found upon

the lower extremities, and is rare upon the palms of the hands, soles of the feet and scalp. The eruption may appear as outbreaks at regular or irregular intervals, or continuously. When successive bullæ are being rapidly and continuously formed the eruption is called a *pemphigus diutinus.*

The eruption consists of blebs varying in size from a lentil to a hen's egg, or even larger ; they are hemispherical or ovalish in form, and with tense walls from distension by their liquid contents. They are irregularly localized, isolated or arranged in groups (*p. confertus*). Occasionally new bullæ are arranged in a circular manner around an older bulla (*p. circinatus*). They are seated upon a slightly inflamed base and are surrounded by normal or somewhat hyperæmic skin. They form either slowly or rapidly, often attaining their full development in a few hours, and continue as blebs during their whole existence. Each bulla runs its course in from two to six or eight days. They retain their original size or increase either by coalescing with neighboring bullæ, or by spreading peripherically. They may be limited to certain regions or extend over a considerable portion of the body. The outbreak of the eruption is accompanied by a feeling of burning or itching. There may be only a few isolated bullæ, or the number may be considerable. The walls of the blebs are at first tense from the exuded fluid, but afterward, in consequence of absorption or evaporation of this fluid, the epidermis composing them becomes wrinkled and shriveled up. The contents of the bullæ are at first clear or slightly opaque, but afterward become sero-purulent, from an increase in the number of pus corpuscles present. Occasionally they are dark colored from admixture of blood. The contents usually disappear by absorption or evaporation without rupture of the wall ; or if rupture occurs they dry and form a thin scab. If sero-purulent matter becomes confined beneath the scab, considerable inflammation may result or a lymphangoitis arise.

The base of a bulla is formed by one or two layers of rete cells or by the naked corium, and the covering, by the corneous layer alone or by rete cells in addition. After the scab has

fallen off, the skin which has been the seat of the eruption, shows a brown pigmentation, which lasts some time. Scars are never produced.

Acute Pemphigus Vulgaris is most frequently met with in children, being very rare in adults. Its existence in any case has been doubted by Hebra and others, but a sufficient number of cases have been seen by different competent observers to prove that it undoubtedly exists, although it is a rare affection. I saw a well-marked case last winter occur in a child just after recovery from measles. It is usually ushered in by chills, fever, etc., and the eruption arises either upon an erythematous or a previously normal skin. The bullæ may appear upon different parts of the body, but are met with especially upon the backs of the hands and corresponding part of the feet. The disease runs a favorable course, the bullæ disappearing in two or three weeks, except in the case of ill-nourished or sickly children, in whom a fatal termination may occur. If the disease is malignant in character, the bullæ will have sero-purulent or bloody contents. A pemphigus hæmorrhagicus occurring over the whole body has been described.

Chronic Pemphigus Vulgaris is characterized by the successive development of variously sized bullæ of the character already described. The eruption is rarely general over the whole body, and the number of bullæ present is generally limited. The contents of the bullæ disappear either by absorption or evaporation without rupture of the covering, or the wall bursts, and the contents dry to a scab, beneath which the skin is red and secretes a sero-purulent exudation. The disease is chronic in its course, the duration of the eruption being prolonged by successive outbreaks of new blebs. Its course may be favorable or unfavorable, depending upon the general condition of nutrition of the individual affected. It is usually benign, when it runs its course in from two to six months. There may be only one attack, but relapses generally occur after intervals of months or years. In the malignant form, which is rare, the number of bullæ is considerable ; they form rapidly, coalesce and the contents dry up without rupture ; or, bursting, dry into thick crusts, and leave

the base covered with a puriform or sanguinolent exudation. Successive bullæ rapidly form involving a considerable area of the skin and death finally results after a few weeks, or perhaps years, from general prostration or consecutive disease of the lungs or kidneys.

Some cases of pemphigus are attended by intense itching, which causes the patient to scratch and rupture the bullæ or even cause hæmorrhage. This form is called pemphigus pruriginosus. These cases have often an unfavorable termination, as the scratching causes excoriations or ulcerations, and the patient's health becomes gradually undermined.

In children bullæ often appear without any symptoms of general systemic disturbance; in these cases the number of bullæ is limited, and the disease is prolonged by the successive formation of a few isolated blebs.

Pemphigus Foliaceus.—In this form the bullæ are small and the walls are not tense, but flabby, as the exuded liquid is not in sufficient quantity to fully distend them. The contents are of a milky, opaque or yellowish-red color. The eruption generally commences on the front of the chest as a single bulla seated upon a slightly infiltrated skin. Wherever situated, new bullæ generally form around a primary bleb and afterward unite with it, or the latter spreads by peripheral extension. The contents of the bullæ show little tendency to drying up, but the bullæ bursting, the liquid oozes out upon the free surface and the epidermic wall hangs in shreds from the excoriated areas.

New epidermis rarely forms upon the affected part, and as the eruption extends the corium soon forms the base over a greater or less extent of area, the skin presenting a red and weeping surface, and the secretion drying to thin varnish-like friable crusts. Sometimes new epidermis forms, but it is speedily removed, either mechanically or from new exudation occurring. If the contents dry to a scab, the under surface of the latter has numerous villous-like processes composed of sebaceous matter, which is derived from the ducts of the sebaceous glands, and with which they are directly united.

When the eruption extends over a large area it resembles the condition in cases of burning in the second degree. In this condition there are no bullæ present, as the epidermis is not capable of forming a covering. The surface of the affected area is crossed by irregular curved fissures, and partly covered with crusts of a moist or dry, dark-red, parchment-like character. When the eruption becomes general, as it almost always does sooner or later, the hairs become sparse and thin or fall out, the eyelids ectropic, the nails thin and brittle, there is loss of appetite, restlessness, severe pain from lying or turning, fever attacks, at first slight and intermittent, later continuous; diarrhœa, and finally death. The general system suffers in this manner only after the disease has lasted a considerable period and a large extent of surface is affected.

When the eruption has lasted a long time the whole surface of the body becomes affected and the condition of the patient is one of extreme misery. After healing, millet-sized milia in groups are sometimes found over the whole surface.

The eruption may appear on the lips, mouth, nose, pharynx, tonsils, external auditory canal, bronchi, stomach, intestinal canal and vaginal mucous membrane. In these cases the epithelial covering is soon softened and thrown off, leaving bright red or grayish, sharply limited spots. It has also been observed on the conjunctiva bulbi. Sometimes it appears first on the mucous membrane and afterwards on the skin.

Anatomy.—The liquid in recent bullæ is serous, with few corpuscles, but soon pus, fatty acid crystals, blood corpuscles and epithelial cells are present; uric acid crystals and free ammonia have been found by some but not by others. The reaction is alkaline, and the older the fluid the more alkaline it becomes.

The bulla has been described as one-chambered, the lower cells of the rete being separated by the exuded liquid, and the cells elongated, whilst the upper layers are flattened and have their long axis parallel with the surface of the corium. The lengthened rete cells are soon thrown off and suspended in the bullous liquid. The papillæ are swollen and broader, and the

tissue penetrated by fine spaces and infiltrated with serum. The bloodvessels are enlarged; hyperæmia of the skin may exist before the bullæ are formed. The bullæ are more superficially seated than in herpes or eczema, the covering being formed from the corneous layer and upper part of the rete and the base by the lengthened rete cells or corium. From their superficial situation there is, even after a long duration of the eruption, no loss of substance and consequently no cicatrices, but restitution with temporary pigmentation.

FIG. 34.—Vertical section of half a recent bulla of chronic pemphigus: *a*, corneous layer; *b*, rete; *c*, bulla; *d*, upper part of corium; *e*, chambers at peripheral part of bulla; *g*, deep part of corium. Cavity of bulla contains a fibrinous material.

Post mortem examination has shown anæmia of the muscles, flabbiness of the heart and lungs, œdema of the brain, general anæmia, and occasionally amyloid degeneration of the liver and spleen, all of which are to be regarded as a result of the cachexia.

I have made a considerable number of sections of bullæ from a case of chronic pemphigus and found the bullæ contents to lie between the rete cells and the corium. The lower

rows of rete cells were generally destroyed by the process and seemed to have undergone a fibrinous degeneration, a coagulation necrosis. At the margin of the bulla these changed cells divided the bulla into a number of compartments. Throughout the entire bulla bands of fibrinous material were observed, as shown in fig. 34. In some of the bullæ examined the lower row of rete cells remained unchanged and the bullæ was formed between the lower and upper rete cells. The corneous layer was unaffected. The papillæ, corium and subcutaneous tissue were infiltrated with round cells and their bloodvessels dilated.

Etiology.—Pemphigus is a rare disease. It is much more frequent in children than in adults. I have met with it most frequently in the first year of life. Atmospheric changes do not influence its production. Generally there is a depraved condition of the body, especially of the nervous system. Uterine disorders sometimes cause it, if we regard herpes gestationis as a pemphigus. It is not contagious. Syphilis is not a cause; the so-called syphilitic pemphigus being not a true pemphigus but a bullous syphiloderm.

Different views are held as to the causes of pemphigus; by some it is regarded as a disease of the blood, by others as produced by a deficient excretion of urine in cases of nephritis. Pemphigus foliaceus is more frequent in women than in men, but pemphigus vulgaris occurs equally in both sexes. Some cases seem to be hereditary. According to Steiner it is often of pyæmic origin in children. In 7,000 cases of sick children at the Out-door Department of Bellevue Hospital I have seen but two cases. In the Nursery and Child's Hospital cases of acute pemphigus were occasionally observed.

Hebra observed a case of pemphigus vulgaris of the skin and mucous membrane on a man affected with prurigo; the prurigo eruption disappearing during the existence of the pemphigus and reappearing upon its subsidence.

Diagnosis.—Pemphigus can be confounded with herpes iris, urticaria, pustular syphilide, bullous syphilide, scabies, impetigo, eczema rubrum, and erysipelas. In herpes iris the bullæ are

sometimes of similar constitution and may easily be confounded with pemphigus. They disappear rapidly and do not return; whereas in pemphigus new bullæ always return and relapses of the eruption occur. Herpes arises always on an erythematous base, pemphigus only occasionally. Herpes is generally situated on the back of hands and feet, and later, on other parts of skin; pemphigus has no special situations. In pemphigus the general constitution is much more affected than in herpes iris.

Herpes iris is always acute, lasting a few weeks; the vesicles and blebs are of varied colors throughout their course; the surrounding skin is inflamed, the vesicles are arranged concentrically and increase in this manner. Pemphigus is a chronic affection, the varied colors of herpes iris are absent, and the surrounding skin is generally normal. The bullæ are seldom arranged concentrically.

In syphilis, bullæ sometimes form that rapidly—become pustular and ulcerate.

Bullous syphilide is distinguished from pemphigus by other signs of congenital syphilis and by the character of the crusts, which are thick and firm, while those of pemphigus are thin and brittle. In syphilis there is also generally some form of ulceration present.

The bullous syphiloderm dries into thick, bulky, greenish crusts, and beneath the crusts there is excoriation or ulceration. conditions absent in pemphigus.

In scabies bullæ are often present in children, but the general symptoms and course of the eruption present in scabies make the diagnosis easy.

Pemphigus can only be confounded with impetigo when the contents of the bullæ dry to crusts. The frequent appearance of impetigo on the lower extremities, the slow development of the pustules, their course, and absence of any general constitutional symptoms enable the diagnosis to be made.

Pemphigus foliaceus resembles eczema rubrum and squamosum in the color of the skin and presence of scales. The depressed constitution and the successive development of bullæ, the slight amount of discharge, itching or infiltration of

the skin, the loss of flesh and dark pigmentation point to pemphigus.

In erysipelas the general character of the eruption, its spreading, etc., soon show the character of the disease.

Blebs are often produced by artificial means, as strong acids and chloroform, for the purpose of feigning disease.

Artificial bullæ can be produced by mechanical influences on the soles of the feet and ankles from too much traveling, or in fleshy persons on the buttock.

Bullæ sometimes develop on wheals, but in these cases there are always some ordinary wheals also present.

For the diagnosis of pemphigus not only the presence of blebs, but their manner of appearance, their course, and the successive development is necessary for the diagnosis.

Prognosis.—The prognosis depends on the special form of the disease. In pemphigus vulgaris it is in general favorable, while in pemphigus foliaceus and pruriginosus it is unfavorable as a rule, as they generally lead to death.

In pemphigus vulgaris the duration of an attack can not be prognosticated and the final result is indefinite. Cases with tense walls, few bullæ, slow production without fever, in well nourished young persons and children are favorable ; while numerous bullæ, successive development of new ones, flabby walls, continuous fever, loss of strength, and marasmus are unfavorable symptoms.

Those cases in which a few bullæ relapse after a day's duration are never dangerous. Numerous bullæ, by the rapid decomposition of their contents, may produce a lymphangoitis, adenitis, loss of strength, or purulent pneumonia, pyelitis and death.

In children the prognosis is unfavorable when the disease is complicated with bronchial or intestinal catarrh, kidney trouble, or hæmaturia.

Treatment.—The treatment is both local and internal. The local treatment consists in the administration of baths either simple or medicated, and the use of ointments or dusting powders. At the commencement of the eruption, and when only a

few bullæ are present, any non-irritating dusting powder may be employed. If the bullæ are tense they may be pricked. If crusts are present, salves, as zinc, or diachylon ointment may be employed for their removal.

If the eruption is limited in extent, the use of these salves may be continued. If the skin is much inflamed, douches, or wet-packs, or baths may be employed. If the eruption is extensive and the skin irritable, use may be made of the continuous bath ; this bath may consist of water alone at a temperature of 95°, or it may be medicated by the addition of corrosive sublimate, or the carbonate of soda. From 2 to 3 drachms of the bichloride are sufficient for a bath.

Tar baths are especially useful in pruriginous pemphigus. The patient may remain days or weeks in these baths if necessary. If the baths are not well borne, the surface may be protected by non-irritating powders or ointments. Antiseptic absorbent cotton applied to the surface lessens the suppuration, and the disagreeable smell from decomposing pus. When the mucous membrane of the mouth is affected, it should be gargled with a solution of chlorate of potash or the permanganate of potash.

Internal treatment.—The general condition of the system must receive careful attention, good food, animal diet, milk, wine or ale, freedom from mental excitement, tonics, and mineral acids should be administered.

Among medicinal substances arsenic is the only one which exerts a specially curative effect ; this remedy when given in sufficiently large doses, acts almost as a specific against pemphigus vulgaris, as first shown by Mr. Hutchinson. If necessary the dose must by increased until the physiological action has been reached, and its use persisted in for some time. In pemphigus foliaceus its action is not so beneficial ; for these cases the treatment recommended by Dr. Sherwell, of Brooklyn, seems to give the best results. His plan consists in the free administration of linseed oil both internally and externally. For internal use either the pure oil should be taken, or the seeds may be eaten in large quantities. Externally the oil is

applied by inunction, or by wrapping the patients up in cloths soaked in the oil.

HYDROA.

Syn.—Pemphigus Prurigineuse.

Definition.—Hydroa is an acute or chronic disease of the skin, probably the result of a trophic change, due to some as yet undetermined lesion of the central nervous system, and appears as solid groups of vesicles or small bullæ situated upon reddened, infiltrated, papular bases, attended by an intense degree of pruritus and much constitutional depression.

History.—Hydroa is a disease as yet not at all well defined ; our ideas about it are very indefinite and uncrystallized, and in most of the text books on dermatology it is either not mentioned at all, or inextricably confounded with other affections, herpes iris, pemphigus, etc. Nevertheless the term represents a definite disease entity and a more complete definition of it lies undoubtedly in the near future.

Bazin first used the word hydroa, intending to designate thereby a set of vesicular or semi-bullous eruptions which could not be classified under the head of erythema, herpes or pemphigus, even in their more unusual manifestations. He described three varieties ; one acute, and two chronic ; and named them hydroa vesiculeux, hydroa vacciniforme, and hydroa bulleux. He evidently included the herpes iris of Willan and Bateman, which certainly does not belong here. Hydroa vacciniforme, also, is simply a variety of hydroa vesiculeux.

The French dermatologists of to-day in the main follow Bazin's classification, though some of them, notably Diday and Doyen, regard hydroa bulleux as a " pemphigus à petite bulles."

'By the German writers the disease as an entity is entirely passed over. In 1880 there appeared in the *Archives of Dermatology* an article by T. Colcott Fox, compiled from the papers of the late Tilbury Fox, of London, which is quite exhaustive and gives clinical studies of a number of recorded

cases. To that paper I am indebted for most of the information concerning the disease here embodied.

Symptoms.—Hydroa is probably a neurotic disease, in which vaso-motor disturbances, permanent inflammatory changes and disturbances of sensation play an important part. Its features, as a whole disease, are always present ; but it is worse in paroxysms, as are so many nervous diseases.

There is a variable period of general ill-health before the disease comes on. There is probably for a long time more or less constitutional depression, general weakness, etc. The immediate attack is preceded by a slight pyrexia, with malaise, insomnia, gastric disturbance, etc. Then there appears a small bulla—pin-head to split-pea in size—very itchy, and developed upon a small itchy papule. The lesions are arranged in groups, with normal intervening skin, and the groups are usually seen upon the exterior aspect of the limbs, upon the genitals, the face, or even upon the mucous membrane of the mouth. They may disappear in a few days, or become purulent, and lead to the formation of crusts, etc. The pruritus is very intense. Successive paroxysmal eruptions may occur. Acute cases last one to two months ; chronic ones for months or years.

Three varieties are to be distinguished :

1. *H. simplex.* These are the slight or vesicular cases. The lesions form scattered patches of small vesicles upon various parts of the body ; they are slightly itchy, and do not recur ; or if they do recur, it is after a long interval of time, and in the same slight form.

2. *H. herpetiforme.* Here the lesions are severer, and the disease more extensive. Herpetiform groups of vesicles, larger than in the simple form, and more numerous, are found over various parts of the body. They are more apt to be chronic, and to run into the third form.

3. *H. bulleux s. pruriginosum.* Here small bullæ are found widely scattered over the surface of the body, which soon rupture and leave infiltrated, red, pruriginous spots. This is the chronic form of the disease, and successive crops follow one another continuously. The itching is most intense.

Etiology.—General ill-health, exposure, overwork, worry, excessive wear and tear of mind and body, nervous shocks: these are the causes that bring about the lesion of the nervous system which shows itself as hydroa; for there is little reason to doubt that the disease is due to some neurosis; probably the spinal cord is in some way injured, and hence its symmetrical occurrence. When death occurs from it, which sometimes happens, it is not due to the intensity of the eruption, but rather to depravity of the general system and nervous exhaustion.

Diagnosis.—In a disease not yet thoroughly distinguished from the conditions that resemble it, the differential diagnosis assumes great importance. We will therefore consider at some length its relations to the maladies for which it may be taken.

H. Simplex may be mistaken for *varicella*. But varicella occurs almost invariably in children; hydroa usually in those of mature age. Moderate hydroa also has no febricula, and its vesicles are few in number, and grouped. In the severer and more general forms the eruption is bullous, and not at all like varicella.

In *pemphigus* the blebs are always larger than in H. simplex.

Erythema multiforme, and especially that variety of it called *E. papulatum*, may become vesicular like hydroa; and in fact many of the cases called vesicular erythema, have really been cases of hydroa. Erythema papulatum itself is only very exceptionally vesicular. The pruritus, and the herpetiform distribution will also distinguish hydroa. Indeed, both diseases run a short course, and their treatment is very much the same. More advanced and chronic hydroa is pruriginous and bullous, and not to be mistaken for erythema.

Herper iris at first looks very like hydroa; indeed Duhring and others look upon them as identical. But the secondary rings of vesicles soon form in herpes iris, and the dull purplish color indicates the hæmorrhagic tendency.

In so far as *herpes* itself is concerned, it is so like the hydroa herpetiforme that no real distinction can be drawn between them. They are virtually the same thing.

The remains of an herpetiform or bullous hydroa are hardly likely to be mistaken for *eczema*.

H. Bullosa and the *pruriginous pemphigus* of some of the French writers are one and the same thing.

Any case of *scabies* in which the eruption is abundant enough to make it look anything like a hydroa will be one in which the acari and their burrows will be readily found.

From *urticaria*, hydroa may be distinguished by the invasion, manifest cause and original wheals of the former disease.

Two forms of *acne* might be taken for hydroa. The first is *iodine acne* which may resemble it very closely; the small size of the iodide pustules, the localization upon the face, and the etiology, may help the diagnosis. The acne which occurs in debilitated individuals, the so-called *acne cachecticorum* is indolent, painless, and non-pruritic; hydroa is very itchy, is paroxysmally recurrent in its attacks, and is found where there are no sebaceous glands at all, as upon the palms of the hands.

The last and one of the most important of the diseases to be differentiated from hydroa bullosa is *pemphigus*. The bullæ of hydroa are smaller than those of pemphigus; they are not spread over the whole body, as those of pemphigus usually are, but are clustered in irregular groups. Hydroa is intensely itchy; pemphigus is not. Nevertheless, it must be admitted that there are a number of cases which seem to be on the border line between the two diseases; in which it is impossible, with our present knowledge, to say whether they belong to hydroa or pemphigus.

Prognosis.—Mild cases usually terminate in recovery. Chronic ones are very obstinate; but the patient succumbs to the general marasmus rather than to the extent or severity of the eruption.

Treatment.—Hydroa, when chronic, is a very stubborn disease. The milder cases run a definite and short course; for them general treatment—quinine and iron—and local soothing applications will suffice. In any case a most important element in the therapy is the treatment of the threatened nervous debility by hygienic and medicinal means of all kinds.

For the severer cases a variety of measures may be employed. Nerve tonics—arsenic, iron, quinine, strychnia—or best of all, especially when there is struma present—cod-liver oil. When there is congestion of any of the internal organs, when excretion is not properly performed by the skin, and there is tendency to an erythematous congestion, diuretics are useful. Fox recommends acetate of potash, nitre, and taraxacum. The gastric functions must be carefully seen to, and all abnormalities corrected. Dyspeptic troubles and costiveness especially increase the severity of hydroa. Good plain diet, with but little meat, much milk and vegetables must be enjoined. Carbonate of magnesia and nux vomica is useful in these cases here. Besides all these, careful avoidance of overwork of any kind, of mental excitement, or chilling of the surface or exposure to the sun's heat must be observed.

For that most annoying symptom, the pruritus, which wears the patient out by preventing rest, and thus directly contributes to a lethal result, various local applications may be used. As good as any are lead or calamine lotions; oil inunctions are also recommended. Bran or alkaline baths are useful; but special stress is laid by Fox upon the value of the tar preparations for this symptom.

POMPHOLYX.

Syn.—Cheiro-pompholyx; dysidrosis.

Definition.—An acute inflammatory affection characterized by the symmetrical development upon the palms of the hands, and generally also upon the soles of the feet, of deep seated, clear vesicles, usually grouped, which afterward become opaque, and in a few days disappear by rupture or absorption, leaving a non-inflammatory skin behind.

Symptoms.—I have placed this affection among the non-contagious inflammatory affections, as I believe it to be closely related to herpes, but a considerable number of dermatologists regard it as an affection of the sweat glands, hence the name dysidrosis as originally proposed by the late Dr. Tilbury Fox.

The eruption has been especially described by English dermatologists, especially Dr. Fox and Mr. Hutchinson. I will quote their description of the affection, and add a history of a case which was under my observation in New York, as that will give the reader the best idea of the subject.

Mr. Hutchinson's description of the affection is briefly as follows: "The more severe forms which I have seen have always been in women, and usually in association with a highly nervous temperament. The disease appears to be characterized by rapid and symmetrical development, by tendency to spontaneous cure, and by the liability to recur over and over again in the same individual. The hands are the parts first affected; the feet come next; and in a few instances a rash appears over the rest of the body. In the majority of cases the hands alone suffer, and in all they are the parts most severely affected. A tendency to spontaneous absorption of the fluid contained in the vesicles or bullæ, even when the latter are very large, is a very remarkable feature. It is not connected with any local cause nor is it influenced by local treatment. The eruption begins with intense burning and itching on some part of the hand, usually between the fingers. After a short time—a few hours or a day or two—there are seen, deeply placed in the skin, small accumulations of clear serum, looking like sago-grains. These are perfectly transparent and not unfrequently resemble the vesicles of scabies sufficiently to excite suspicion. They differ, however, from those of scabies in being much more deeply placed, having flatter tops, in being usually closer grouped together instead of scattered, and in the entire absence of burrows. In some it occurs during hot weather, but in most instances no cause can be given for its occurrence. Those who have had it once will very probably have it again, and several of the facts in its clinical history coincide pretty nearly with what is true of herpes of the lips and of the prepuce. I do not recollect even to have seen a well-marked example of it in a patient under the age of puberty, nor in a very old patient. The tendency to speedy and spontaneous disappearance, leaving the skin quite sound, supplies a feature of positive differ-

ence from eczema, of which the indefinite duration and the tendency to persist and become aggravated are such marked characters. Symmetry, spontaneous cure and liability to relapse are its clinical characteristics. In minor degrees the affection is tolerably common. Many, indeed perhaps most of us, are liable at times in connection with slight derangements of health, or possibly with exposure to the sun, to the occurrence of a very irritable sago-grain eruption on the sides of the fingers. The so-called sago-grains are deeply placed effusions of serum, but in a large majority of cases they undergo spontaneous absorption after a few days, and not even peeling of the epidermis results. They never by any chance result in eczema. In those liable to this slight affection the disease is prone to recur repeatedly at intervals perhaps of a few years. More severe cases, in which the vesicles coalesce and develop into bullæ, are not very uncommon, their subjects being, so far as my experience has gone, almost invariably young women. In several of the most severe cases which I have witnessed the eruption was attended by extreme depression of spirits. Although the eruption always shows a tendency to spontaneous disappearance, yet, in some instances, it may last a couple of months and require treatment. In one case under my care the liability to attacks had extended over thirty years. In this case the vesicles always broke, and a state much resembling that known as psoriasis palmaris resulted in the palms, whilst on the sides of the fingers it looked more like eczema."

Dr. Fox who has very carefully studied the clinical characters of the disease in a great number of patients, says : " The disease in its slightest form, is confined to the hands, occurring in the interdigits, over the palm and along the sides of the fingers, and on the palmar surfaces. It makes its appearance in those who habitually perspire freely, and the patients feel weak and depressed. The eruption consists of minute vesicles deeply imbedded in the skin, and are at first isolated. They do not readily burst, and when a few days old look like sago-grains imbedded in the skin. The vesicles afterward become more distended and raised. They are not pointed, but oval,

eventually become faintly yellow in color, and run together and form bullæ. The hand is then stiff and painful. If the eruption is left undisturbed, the fluid is partly absorbed, partly evaporated, the cuticle then peels off, leaving a non-discharging, reddened, exposed derma. In some of the milder cases only vesicles are formed. When disappearing altogether from the hand the palm is left harsh and slightly scaling. In some cases a red, dry, slightly scurfy, painful surface is left behind and becomes chronic. No patient is well who has this disease. In severe cases there is great nervous debility."

History of my patient.—L. S., born 1846, is of medium height, light complexion and weak muscular development. In 1849, one of his thighs was fractured twice, after which time mother says he was sickly and nervous for a number of years. In 1866 was married, and six children have been born to him since that time, three of whom are dead and three living. Two children (boy aged 5 months and girl aged 2 years) died of spinal meningitis, and one (a female child) died of pemphigus. In February, 1871, he received an appointment in the New York fire department, since which time he has always been connected with this service. Previous to his marriage a few vesicles would appear occasionally on his hands, but the first severe attack was in July, 1871. This attack lasted about two months, appearing both on the hands and feet, but commencing on the hands. The feet were not attacked until about one month after the hands. The eruption occupied the entire palms of the hands, the palmar aspects and sides of the fingers, and a portion of the plantar surfaces of the ungual phalanges. On the feet it appeared only on the soles, from which it removed the entire corneous layer of the epidermis. According to the patient's statement, the eruption during this attack consisted of vesicles, at first deeply placed and isolated, but afterwards frequently uniting and forming bullæ. The vesicles almost always dried up, their contents being absorbed without a rupture of the walls taking place. Even the large bullæ generally dried up without rupturing. If large areas of the skin were bereft of all that part of the epi-

dermis above the vesicles or bullæ, *i. e.*, the corneous layer of the skin, all that was observed beneath was a reddish, smooth surface. Various applications were made to the hands in the treatment of the disease (it having been regarded as an eczema), but no benefit was derived from their use. He then ceased treatment and the disease disappeared spontaneously, having lasted about two months. In 1872 he was bitten in the right hand by a dog, and the dread of hydrophobia made him very nervous and depressed in spirits. In February, 1877, the second severe attack occurred, though isolated vesicles appeared every now and then during this interval of nearly six years. During this last attack, which still continues (June 14th), he has been under my care. The eruption had lasted about three weeks when I first saw him. It had commenced on the palms of the hands near the wrist, and spread over the entire palms, and between the sides and on the palmar surfaces of the fingers. When I saw him the majority were seated between the fingers. The eruption had changed but little in its mode of appearing and in its course since I first saw him. An outbreak is always preceded by a tingling, burning sensation in the parts, and the patient is more than usually depressed and nervous. The eruption appears as small clear vesicles, deeply placed in the skin. They may be single or collected in groups of two, four or more. Very frequently the vesicles forming a group are all of the same age and size. The eruption always was symmetrical, and I have very often observed that exactly corresponding parts of the hands or feet became affected at the same time. If but a single vesicle existed it almost invariably dried up. Where there was an aggregation of vesicles they were at first isolated, but afterward frequently united and formed a bulla. If then the liquid was absorbed, the skin covering them became very hard and dry. I stated that the vesicles appeared to contain a perfectly clear liquid, but this afterward generally became more or less opaque, though scarcely ever yellowish in color. This latter occurred only when large bullæ were formed and the liquid slowly absorbed, *i. e.*, in other words, it was observed

only when the bullæ were of several days' standing, and, as will be seen afterward, was owing to the number of pus cells present in the liquid. The vesicles were never seen to have a red base. The walls of the vesicles appeared of a darker color (from compressed cells) than the surrounding skin or the contained liquid. This really made the vesicles look like sago-grains imbedded in the skin. The vesicles gradually become larger, and raised. Isolated vesicles in the palms of the hands seldom became raised above the level of the skin previous to absorption. Where they appeared in groups they always became raised above the general surface, as also most of the isolated vesicles between the fingers. They were never pointed, but always had a more or less flattened top. After the absorption of the contents or rupture of the vesicles or bullæ, a reddened surface (on account of the thinness of the epidermis) was left behind. At no time was there a cracked or discharging surface or any appearance resembling that of eczema in this region. Occasionally the eruption spread peripherically, especially in the palms of the hands. There has been no change in the appearance of the vesicles since I first saw him, but at present the disease is not so severe, the eruption consisting principally of isolated vesicles and but very few bullæ. Occasionally, however, an "outbreak" occurs lasting two or three days. Then the eruption presents more of the character it had in an earlier period of the disease. The feet are also affected, but only in a slight degree, a group of vesicles appearing occasionally here and there. Their appearance is always preceded by a tingling in the part. They appear symmetrically, and often on exactly corresponding parts. There has never been any accompanying eruption on the other parts of the body. I have tried various local applications without any benefit except keeping the parts soft.

The patient is exceedingly nervous and depressed in spirits. He was so nervous that he hesitated several weeks before allowing me to remove a second portion of the skin from his finger. Even then I was obliged to benumb the part with ether spray before using the knife. He says his forearms and hands

feel benumbed and "sleepy," especially in the morning, if he keeps them elevated above the bedclothes. He sweats a great deal, yet the hottest day in summer is not too hot for him.

The above description was written in 1877, and since that time the disease has recurred many times, in fact just as often as he is subjected to great excitement and exertion consequent upon his duties as a fireman. I have seen a few other cases, but none so marked as this one is.

Anatomy.—According to Tilbury Fox, Tweedy, and some others, the vesicles are caused by retained sweat, the obstacle to the escape of the sweat being situated somewhere in the rete. As Hoggan failed to find any connection in the early stage of the vesicle formation between the sweat duct and the vesicle in the sections prepared by Dr. Fox, although he more than wished to do so, we may regard the sweat duct theory as certainly not proven. My own view is that the disease is a neurosis, and the vesicles have a similar origin as those of herpes, especially herpes progenitalis. In the earliest stage the vesicle contains clear serum, and no formed elements, but afterward pus cells appear and increase in number with the duration of existence of the vesicle. The fluid is either alkaline or neutral, never acid. The liquid comes from the papillary vessels, and passing through and between the lower cells of the rete, collects in different situations in different vesicles. Usually it collects in the upper Malpighian layer at a distance of two or three layers of cells from the stratum corneum. The liquid at the place of collection presses the cells apart in every direction, and changes their form. They are gradually flattened and drawn out, more especially those cells which line the wall of a vesicle. The more the vesicle increases in size the more the cells are flattened out, until at last they appear as fibres in which a nucleus is no longer visible. The cells forming the summit of the vesicle are not so much flattened, and even when the vesicle bursts and the liquid escapes to the free surface, this occurs, not so much by a flattening out of the cells forming the covering, as by a rupture and separation of these structures. The cells of the corneous layer at an early stage of the

vesicle are affected, and in different places over the vesicle become detached from each other, leaving spaces filled with a

FIG. 35 shows the formation of vesicles from adjoining papillæ. The bands separating the vesicle correspond to the inter-papillary spaces. Between *A* and *B* the separating band has become very narrow, whilst that between *B* and *C* is still broad. The stretching and flattening out of the cells of the Malpighian layer is well shown in this drawing. In *B* pus cells have appeared, and some are present in the papillæ and in that part of the Malpighian layer lying between the corium and the vesicles. On the right is to be seen the apex of a papilla cut across.

watery fluid. On this account a portion of the corneous layer is frequently removed even when the vesicles do not burst. The bloodvessels in the papillæ are at first but slightly changed, and but few round cells are found outside of their walls; but in the later stages they become more dilated; though they seldom become what one would call widely dilated. In these later stages also out-wandered round cells appear in greater number in the papilla, and passing in the same direction as the effused serum, they are found also in the Malpighian layer and within the vesicle. Sometimes the collection of these round cells is so great in the Malpighian layer that it is impossible to distinguish the form and outlines of the cells forming the lower two or three cell-layers of this structure. The serum in passing from the papilla to the place of collection causes marked changes in the form and appearance of the cells between which it passes. They become drawn out, paler in color, and less granular in appearance from the imbibition of serum. Generally the change of form and appearance is so great that their outline becomes indistinct, and only occasionally is the nucleus to be seen. Sometimes they appear to reach from the corium to near the corneous layer. It is, however, frequently impossible to see where they terminate, as the Malpighian layer has more the appearance of being commposed of long bands of fibres than of cells.

The change in the parts depends upon the age of the vesicle and the amount of fluid effused. In the earliest stage only the cells of the lower Malpighian layer are drawn out, and those cells surrounding the liquid slightly flattened. But few round cells are seen, and the bloodvessels of the papilla are scarcely changed. The number of layers of cells from the upper Malpighian layer lying between the vesicle and the corneous layer are greater than in a later stage. This of course is not true of those cases in which the liquid at the commencement is situated between the Malpighian and the corneous layers.

In the later stages, the vesicle is larger, the cells more flattened, their margins more indistinct, the bloodvessels more enlarged, and a greater number of round cells

present in the papillæ, Malpighian layer and vesicles. The liquid lies nearer the corneous layer and the corium (as the vesicle increases in size in all directions), and the corneous layer is more broken up. If neighboring vesicles join, the separating bands composed of elongated rete cells rupture, and in this way bullæ may form.

In this case the vesicles are originally separated from each other by a greater or less distance, according to the number of papillæ lying between them. When coalescence occurs the vesicles spread in the usual manner, and the liquid extending horizontally between the cell layers, the vesicles unite before the summit is ruptured. By this union of the effused liquid bullæ are formed, corresponding in size to the amount of liquid contained in the coalesced vesicles. The liquid passes horizontally either between the corneous and Malphigian layer, or between the cells of the latter, and the intervening band is ruptured in the same manner, and its cells become changed in the same way as when the vesicles arise from adjoining papillæ, as already described. This union of separated vesicles and consequent formation of bullæ is accidental, depending upon the amount of resistance offered to the escape of the liquid to the free surface by the structures forming its covering, and upon the distance between the separate vesicles.

In the later stages of the disease, in which several adjoining papillæ are affected, the cell infiltration is greater comparatively than when a single papilla is affected. Instead of being restricted to the papillæ there is considerable round-cell infiltration along the course of the bloodvessels close to the mucous layer, between the papillæ. On account of the amount of cell infiltration into the latter their cells are no longer to be distinguished. This out-wandering of round cells accounts for the occasional opacity of the vesicles in the later stages, as they appear also in the liquid, as I have already written. No change whatever was to be found in the subcutaneous tissue beneath any of the vesicles. The sweat glands were found to be perfectly normal, and there was no distension whatever of their ducts with sweat. In one case the sweat duct was the

principal structure separating two vesicles and delaying their union.

Etiology.—The eruption occurs in persons of a nervous temperament, or whose nutrition is below normal. Many of these persons sweat greatly, especially upon the hands and feet. The disease is a neurosis and not a catarrhal inflammation like eczema, as maintained by Kaposi, who has probably never seen a case of the affection, and his statement that it does not exist, is on a par with the denial of the existence of a varicella or tinea trichophytina barbæ.

Prognosis.—The eruption is easily cured, but relapses are very liable to occur.

Treatment.—Locally there is no application which is of any service in removing the eruption or hastening its course. Ointment of zinc or vaseline, combined with anodynes, may be employed when the part pains or burns. Internally the majority of the patients require tonics of iron, quinine, strychnine and hypophosphites to improve their general nutrition and strengthen the nervous system. All causes of excitement should be avoided as much as possible. Stimulants and tea and coffee are probably injurious. Belladonna in my hands has not been of any service. Arsenic is the only remedy I have found that has a special effect in this disease, and, when given in the proper dose, will almost invariably cut short the eruption. It acts as promptly as it does in pemphigus and this action makes it the more probable that the affection is a neurosis. Fowler's solution or arsenious acid may be given in full doses until the eruption has disappeared, and then small doses should be continued for a considerable length of time longer, together with appropriate tonics and food.

ACNE.

Syn.—Acne vulgaris ; Acne dissemimata ; Whelk.

Definition.—Acne is a chronic inflammatory disease of the sebaceous glands, and the immediately surrounding tissue ; it is characterized by the appearance of red papules, or tubercles

or pustules upon various parts of the body, but especially upon the face and back.

Symptoms.—Acne is one of the commonest forms of skin disease with which we have to deal; it is a malady principally of the sebaceous glands, and, as we might expect, often occurs in conjunction with the other affections of those glands, seborrhœa and comedo. It consists of papules or tubercles varying in size from that of a pin-head to that of a pea, many of which subsequently develop into pustules. The lesions are usually of a reddish or violaceous color, with a suppurating point or a comedo in their centre. They are generally purely inflammatory, and the peri-glandular connective tissue is almost always involved. They naturally occur with greater frequency in those localities where the sebaceous glands are most numerous and most highly developed; they are oftenest seen upon the face, and next most frequently upon the back between the shoulders. They rarely occur in other localities, and are, of course, never seen upon the palms of the hands and the soles of the feet, where no sebaceous glands exist. Subjective sensations are not present except at the commencement of their formation.

The acne papules or pustules may occur in large numbers over the face and back, or only a few, perhaps only one or two, may be present. The individual lesions generally run an acute course; in a day or two the papule becomes a pustule and bursts; but the disease itself is essentially a chronic one, and may last for years. In a well-marked case we will see lesions in all stages of development, from the painful subcutaneous peri-glandular induration at the very beginning, to the circular punched out scars left by the deep pustular form. Between these two extremes every variety of papule, tubercle, and pustule may be met with upon one and the same patient.

The amount of involvement of the connective tissue and the intensity of the inflammation vary much in different cases. In the superficial form, only the gland itself is involved. A small papule forms, which becomes a pustule, with perhaps a comedo in its centre marking the obstructed orifice of the in-

flamed gland. The pustule is ruptured or bursts, and the inflammation quickly subsides, leaving no trace behind. But in bad cases a large amount of the surrounding tissue is implicated; large inflammatory tubercles appear, and considerable tissue destruction with much pus formation results. In many of these cases dermic abscess rather than pustules are found. The neighboring lymphatic glands may become swollen and tender, and disfiguring cicatrices are left when the process terminates.

The eruption of acne is a symmetrical one, though there is no regularity in its distribution. The forehead, cheeks and chin are most commonly attacked. The superficial forms constitute a slight disorder; the severe ones a serious evil, and lead to much disfigurement. It is pre-eminently a disease of early youth; it seldom comes on before puberty, and usually disappears as mature age comes on. It occurs in both sexes, but is commoner in men than in women. It is a local affection, and is in no way prejudicial to the general health. Although almost always a multiform eruption, in most cases there is some special prevailing type. Thus we speak of *acne punctata*, in which a whitish or blackish point (comedo) marks the centre of the small papule, and of *acne papulosa*, when the lesion consists principally of more or less acuminated papules, usually small in size. This latter variety is usually found upon the face, and especially upon the forehead. Most of the papules never go on to form pustules. Then there is *acne pustulosa*, the fully developed type and commonest form of the disease. The pustules are rounded or acuminated, and, as before stated, the amount of surrounding inflammation varies much in different cases. They are formed rapidly, and are usually soon ruptured artificially; when this does not occur they undergo a slower desiccation. If the amount of perifollicular inflammation is great, the pustule is situated on a hard, sensitive and inflamed base, and the disease is called *acne indurata*.

Loss of tissue and subsequent scaring occur as a rule only in the pustular form of the affection; but occasionally we see cases of papular acne in which pus never forms, but in which

the papules, when they disappear, show a distinct loss of tissue and leave a small depressed scar behind. This variety of the disease is known as *acne atrophica*, and is usually very obstinate. In *acne hypertrophica* the leucocytes in the perifollicular inflamed mass become organized, instead of forming pus; new connective tissue is formed, and a permanent hypertrophy remains at the site of the papule.

Other varieties of acne are described. Thus there is *acne cachecticorum*, which occurs in scrofulous and marasmic individuals; it appears as small, flat, livid red papules, or pustules, not usually affecting the face. It has been seen in well-nourished individuals suffering from psychic depression. It usually lasts until the cause is removed. Again, irritations of the sebaceous glands by medicinal substances, which reach the follicles from without, being applied to the skin, or taken internally and excreted through the sebaceous glands; as applications of tar, or any of its congeners, oil of cade, ol. rusci, benzine, creosote, etc., cause an acne called *a. picealis*, which is composed of pea-sized reddish-brown papules, with a characteristic black point in their centre, a plug of tar occluding the mouth of the gland. Pustules and furuncles are also present. It is seen most commonly upon the exterior surfaces of the limbs. The mere presence in a space impregnated with the particles of these substances, or the breathing of their vapor, is often sufficient to cause the eruption. The *iodine acne* occurs from the use of the iodides, and is seen upon the face as conical pustules upon a vivid red base. The presence of iodine has been proved in the pus by Adam Kiewicz. The *bromine acne* is sometimes very intense, besides the ordinary pustules and papules there occurs a deep seated inflammatory infiltration of the cutis, with destruction of the glands and follicles. Thus there are seen diffuse infiltrations composed of multitudes of closely packed acne pustules, after the opening of which the whole surface presents a honey-combed appearance, and goes on to unhealthy ulcerations; also dark-brown diffuse infiltrations, as large as a silver dollar, or even the palm of the hand, etc. They leave scars in many cases. Bromine

has been demonstrated by Gutman in the contents of the pustules.

For further information upon the subject of these medicinal eruptions, the reader is referred to the chapter on dermatitis.

Anatomy.—In the majority of cases of acne the inflammation is due to the retention of sebum within the sebaceous follicle and its subsequent decomposition, which irritates the surrounding bloodvessels and sets up a perifolliculitis. If the inflammation is extensive, the gland is destroyed and perhaps also the hair follicle. In the earliest stage of the disease there is bloodves-

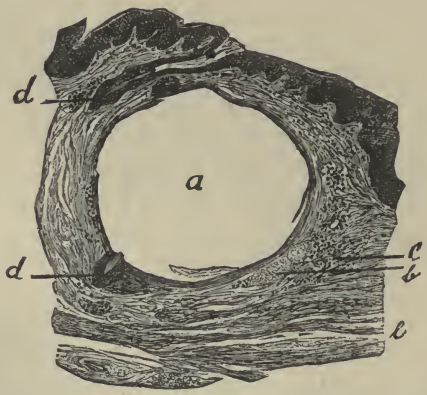


FIG. 36.—Section of an acne pustule: *a*, cavity of sebaceous gland; *b*, acinus of the gland in a normal condition; *c*, round cell infiltration; *d*, hair follicle; *e*, subcutaneous tissue.

sel dilatation with exudation of serum and emigration of corpuscles. If the inflammation continues to increase the exudation will be purulent in character. In some cases the follicle becomes destroyed by the serous exudation alone, as I have observed in a case of atrophic acne. The sebaceous gland may also be destroyed from changes occurring within the gland without much perifolliculitis occurring, as seen in Fig. 36.

The hair follicles are not always affected in cases of acne, but hairs are often found curled up within the dilated sebaceous gland cavity. As the first changes occur within the gland,

acne is therefore to be regarded as a folliculitis and in this respect differs from a sycosis, which is primarily a perifolliculitis.

Etiology.—It is met with in both sexes and most frequently at the age of puberty. Dyspepsia and other derangement of the digestive and intestinal tract, and disorders of menstruation or of the uterus are the principal causes of acne. Scrofula, general debility, chlorosis, comedones and masturbation are undoubtedly frequent causes. Retention of sebaceous matter, either from weakness of the muscle fibres of the skin, or from inflammatory swelling from a neighboring follicle, is probably an occasional cause.

Diagnosis.—The eruption may resemble a papular or pustular syphilide, or an acne rosacea. In syphilis the history of the case ; the situation of the disease, the eruption being as a rule general over the whole body, whilst acne is confined to the face and shoulders ; the grouping of the papules or pustules, and the duration of the individual lesions, the lesions in syphilis being very chronic in their course, will generally enable one to make a correct diagnosis.

The diagnosis from acne rosacea is given when discussing the latter disease.

Prognosis.—The prognosis depends upon our ability to remove the cause. Generally the eruption is quickly removed, but relapses are very liable to occur.

Treatment.—As we have learned, acne almost invariably depends upon some abnormal condition of the intestinal canal or of the uterus, and, consequently, as long as these conditions exist, the eruption is liable to continue. The treatment of acne, therefore, must be directed not only to the existing eruption, but also to the cause, in order to prevent relapses occurring. In fact, if we can remove the cause, the eruption soon disappears, as the life of an individual papule or pustule is very short, and the lesion disappears spontaneously in a few days. The habits and constitution of the patient must be carefully studied, and the cause of the eruption, if possible, discovered. The digestive organs must be kept in a normal condition by regulation of the diet and treatment of any

abnormal condition. The manner in which this should be done belongs to the domain of internal medicine, and need not be dwelt upon here. Dyspepsia, of whatever kind, must be cured, and the bowels regulated. In plethoric individuals, Hunyadi János water, or a mixture of sulphate of magnesia in a vegetable infusion, answers well. If the person is not plethoric, and an acid dyspepsia is also present, the ordinary rhubarb and soda mixture, combined or not with nux vomica, or a vegetable bitter and an aromatic, as the compound tincture of cardamoms, together with regulation of diet, especially as regards acids, tea, or coffee, and foods which give rise to flatulence, is perhaps the best treatment. If anæmic or chlorotic, iron and aloes may be prescribed.

If there is any uterine trouble, as inflammation or displacement, these should unquestionably be treated if the acne proves obstinate. As many of the cases of acne occur in young unmarried females, the uterus can not, as a rule, receive local treatment, and hence we are obliged to rely upon keeping the intestinal tract normal, and prescribing such remedies as will reduce the congestion of the uterus, if any be present. Vaginal injections of hot or cold water, as the individual case requires, and the internal administration of ergot, as first suggested for this disease by Dr. Denslow, will generally prove effective. I believe the benefit derived from ergot depends upon its action on the uterus much more than upon the unstriped muscle fibres of the skin, but whatever its action, it is certainly a valuable remedy in the acne of females. I have not had any thing like the same benefit from it in the case of males. The average dose of the fluid extract is about half a drachm three times a day, but it may be necessary to slightly increase or considerably reduce this amount in many cases. Sulphide of lime in small doses until its physiological effect has been produced, as shown by hyperæmia and perhaps the formation of pustules, is recommended by Piffard. Arsenic is sometimes of advantage, but is not be relied upon. Glycerine, in doses of one tablespoonful three times a day, is beneficial in some cases. In acne indurata in anæmic, chlorotic, or scrofulous persons,

there is nothing of so much advantage as cod-liver oil. It may be employed both externally and internally, and given alone or with iron, as indicated in individual cases. These latter cases also are benefited by good diet, pure air, etc.

Local Treatment.—Local treatment can remove the eruption, but generally will not prevent relapses. It is to be regulated according to to the pathological condition present. In acute cases with considerable hyperæmia, heat, redness, etc., soothing applications, as hot water, dusting powders, etc., should be employed. In the subacute papular and pustular form the eruption is generally treated by slightly stimulating applications, producing hyperæmia and the removal of the superficial layers of the horny cells, and assisting the circulation of the part. For this purpose green soap may be used in the following manner. Wash the face thoroughly with green soap, or green soap and alcohol in the proportion of two of soap to one of alcohol (spiritus saponis kalinus, Hebra), using considerable friction; then remove the soap with warm water and apply a dusting powder, as bismuth or starch, or a non-irritating ointment, as rose ointment. The strength of the soap solution and the amount of friction to be employed are to be regulated by the special irritability of the skin. Instead of green soap, Vleminck's solution (calcis ʒ iv., sulphur. sublim. ʒ i., aqua ʒ x, boil to ʒ vi., and filter) may be used. If there is much induration the green soap may be spread upon a flannel and applied over night, and washed off in the morning. This use of green soap and emollient applications will remove the eruption of a papular, pustular or indurated acne. The substance most used for its stimulating effect and assistance in the excretion of the sebaceous matter by removal of the upper layer of horny cells is probably sublimed sulphur used as a powder, lotion, or ointment. The sulphur can be used alone or mixed with some inert powder, and dusted on the face. Kummerfeld's lotion (sulphur. precip. ʒ xiv., pulv. camph. gr. x, pulv. tragacanth. ʒ i., aq. calcis, aq. rosæ, āā ʒ ii.), or Vleminck's solution, 1 to 4 or 6 of water, may be used as a lotion, or precipitated sulphur, ʒ ss. to ʒ ii. to the ounce of lard, as an

ointment, to be well rubbed in at night. The iodide of sulphur, 2 to 3 grains to the ounce of lard, or the hypochloride of sulphur (sulphur. hypochloridi, 3 iss., potass carb., gr. x.; adipis benz. ℥ i., ol. amygdal., gtt. v.) ointment, as recommended by Erasmus Wilson, may also be used. All these preparations have very similar action, and should be tried in cases of chronic acne. Washing with green soap and, after drying, using a ½ to 2 gr. solution of corrosive sublimate in alcohol is useful in ordinary papular acne. If it is desired to make the solution more astringent, sulphate of zinc, five grains to the ounce, can be added. If there is much induration, the mercurial plaster or white precipitate ointment, spread on cloth, should be applied every night. In cases of papular and pustular acne without much induration, I use the following ointment: Ung. zinci benz. ℥ i., bismuthi. subnitratis 3 i., glycerini 3 i. If marked induration is present, the white precipitate ointment, in the strength of 1 to 2 drachms to the ounce of the ointment, or calomel 5 to 10 grains to the ounce, should be added. Oleate of mercury applied to papules or tubercles causes them to rapidly become pustules, and may be used on indurated nodules.

Iodized glycerine (iodine, potass. iod., āā 1 part, glycerine 2 parts) applied twice a day and then waiting until the irritation subsides, to be again re-applied, is recommended by Kaposi.

By means of the dermal curette, applied with some force, the top of papules and pustules may be torn off and the orifices of the sebaceous glands opened. This opening of the orifices of the ducts and the bleeding accompanying the operation produces in some cases markedly beneficial effects on the eruption. It is indicated in chronic cases and it should be repeated every three or four days, oil being applied after each scraping.

The eruption having been removed by any of the above modes of treatment, relapses should be guarded against as much as possible by attention to the diet, etc., and always washing the face with hot water and a good soap. An occasional solitary acne papule can not be prevented and re-

quires no treatment beyond the prophylactic measures already mentioned.

ACNE ROSACEA.

Syn.—Rosacea ; gutta rosea ; wine-nose ; brandy-nose.

Definition.—Acne rosacea is a chronic hyperæmic or inflammatory disease of the skin of the face, especially of the nose and cheeks, characterized by a diffuse redness, by dilated bloodvessels, by soft reddish acne-formed papules, and eventually by hypertrophy of the integument of the part.

Symptoms.—Rosacea is a very common affection of the skin of the nose, chin, cheeks, and forehead, and occurs in three forms, or rather three stages, which merge into one another.

In the *first* and earliest stage there is noticed a diffuse redness of the nose, perhaps also of the forehead, cheeks, and even ears. There occurs a passive hyperæmia of the parts ; the blood circulates slowly through the capillaries and is inclined to stasis. The surface is cold, the circulation is sluggish, and more or less seborrhœa is often present at the same time. The redness fades off into the normal skin ; it is not permanent ; it becomes deeper and even purplish in hue during winter, or when exposed to sudden changes of temperature ; it is also more marked after eating or drinking, and in women during the menstrual period. When thus exacerbated some heat and burning may be felt in the part. At times it may fade away entirely, leaving the skin in an apparently normal condition. It may remain for months or years in this state, and then disappear entirely, or it may become worse and develop into the next stage.

After a variable period the redness becomes permanent, and *the second stage begins.* Dilatation of the cutaneous bloodvessels appears and they are to be seen as delicate red lines branching in various directions through the superficial layers. Individual vessels may become greatly developed, so as to be visible at some distance ; they are usually largest and most numerous on the alæ, nose, and cheeks. Eventually acne papules and pus-

tules appear over the affected area. They show themselves as vivid red, painless, elastic elevations of the size, perhaps, of a small pea, and situated upon the erythematous surface. They are usually only few in number, but there may be many of them closely crowded in exceptional cases. Over their tops the hypertrophied radicles of the cutaneous vessels ramify. Pustules also are occasionally present. In this permanent condition the part may remain for years, varying, as in the first stage, from time to time, but never spontaneously disappearing. At length the third and last stage sets in.

The *third or highest degree* of acne rosacea is much less common than the other two. The passive hyperæmia continues; the bloodvessels become larger and probably more numerous; the glands are enlarged, and hypertrophy of the connective tissue of the affected skin sets in. Round or irregular elastic outgrowths gradually appear upon the part, covered with a plexus of dilated bloodvessels, and studded with comedones and acne pustules. The nose is almost exclusively the part affected, and the gradual hypertrophy may cause it in the course of years to attain monstrous proportions. The alæ may project downward till they touch the upper lip, and the lip become irregularly lobulated and pendulous until it overhangs the mouth. At first the hypertrophied part is of a dark red or livid color, but eventually, in old age, it again becomes white. It forms the well known "brandy nose," or rhinophyma, occasionally seen here, but commoner in other parts of the world, especially in wine growing districts.

Acne rosacea is always a chronic disease and may last for many years. It occurs in both sexes, but is commoner, severer, and more extensive among men than among women. It may remain permanently in any one of its stages. Its limitation to the centre of the face, forehead, nose, cheeks, and chin is very characteristic, though some cases have been seen in which it spread from the side of the face on to the neck. In the early stages, where the passive hyperæmia is the marked feature, the part is colder than normal; but when the acne

lesions are abundantly present, it feels warm to the touch. Subjective symptoms are almost always absent.

Anatomy.—In the first stage there is hyperæmic stasis of the bloodvessels. In the second stage there is hypertrophy of the bloodvessels and of the sebaceous glands. In the third stage there is, in addition to the above changes, also hypertrophy of the connective tissue of the corium. Whether there is a new formation of bloodvessels or only a dilatation and hypertrophy of the existing ones is not known. The epidermis does not take part in the hypertrophy.

Etiology.—Acne rosacea is met with in both sexes, but is more frequent in men than in women. In men it arises from digestive disorders, as dyspepsia, constipation, etc.; the habitual use of spirituous liquors; exposure to wind and weather, and, occasionally, from the excessive use of cold baths. In women it is met with in early life and during the climacteric period and is almost invariably associated with disorders of the intestinal tract or of the uterus. When occurring at the early period of life it is frequently associated with seborrhœa.

Diagnosis.—The disease may be confounded with a tubercular syphilide, acne vulgaris, lupus erythematosus or lupus vulgaris. In syphilis the tubercles are generally of a darker brown color, they are not symmetrical but often grouped, the sebaceous glands do not became inflamed, the bloodvessels are not enlarged, ulceration and crusting occurs, and the mucous membrane or cartilages of the nose are frequently affected. In acne rosacea the process is a slower one, but the color of the tubercles is usually not so dark brown, the course of the eruption is very slow, the sebaceous glands are frequently inflamed, there is never any ulceration, the cartilages are not destroyed, and the eruption is more or less symmetrical. The history of the case and the condition of the skin on the rest of the body will assist in the diagnosis.

In acne vulgaris there is no permanent dilatation of the bloodvessels, the eruption is more acute in its course, and there is generally a considerable number of comedones, papules and pustules present, whereas in acne rosacea the tubercles or pus-

tules are few in number, slow in formation and much larger in size. In erythematous lupus there are no pustules, the disease is very slow in its course, there are a few firmly adherent thin scales with sebaceous plugs attached to their under surface present, and cicatricial tissue formation invariably occurs; in acne rosacea there are pustules and no firmly adherent thin scales or cicatricial tissue present. In lupus vulgaris the soft non-elevated papules, the tendency of the eruption to spread at the periphery, the absence of dilated or hypertrophied blood-vessels, the degeneration, ulceration and cicatricial tissue formation are sufficient for the diagnosis.

Prognosis.—If the disease has passed to the third stage the prognosis is not very favorable, but if in the first stage and the cause can be removed, the eruption will disappear.

Treatment.—The constitutional treatment is the same as that for acne vulgaris. Any digestive or intestinal trouble or displacement of the uterus should receive proper treatment. It is impossible to cure the disease unless these organs are in a fairly normal condition. Proper food, the avoidance of every thing indigestible, and pure air are necessary. Tea or coffee should only be taken in moderation or not at all, and spirituous liquors, wine or beer should be avoided. Ergot internally is often of decided benefit.

The local treatment depends upon the stage of the disease. In the early stage it is the same as that for acne vulgaris and need not be repeated. Later the object is to reduce the hyperæmia, and remove the tubercles and dilated bloodvessels. The tubercles are to be removed by a mercurial plaster, or in the manner recommended for acne vulgaris. If there are a few dilated bloodvessels they may be cut with a bistoury, and warm water afterward applied to promote bleeding. It may be necessary to perform the operation a great number of times, as new vessels generally appear every few days. If there is a diffuse redness from dilatation of a great number of vessels, the part may be scarified by making a number of parallel superficial cuts with a fine bistoury, or the bloodvessels may be torn with a dermal curette and the bleeding stopped by compression with

charpie. Destruction of the vessels by electrolysis has been recommended. Redundant tissue may require removal by the knife or scissors.

SYCOSIS.

Syn.—Sycosis barbæ (Celsus); mentagra (Plenck); dartre pustuleuse mentagre, herpes pustolosus mentagra (Alibert); folliculitis barbæ (Köbner); acne mentagra; lichen menti.

Definition.—Sycosis is a chronic non-contagious perifollicular inflammation involving the hair follicle in its course, appearing chiefly upon the bearded part of the face, and characterized by papules, tubercles and pustules which are invariably perforated by hairs.

Symptoms.—Sycosis appears only on those parts of the body which are supplied with hair, and is almost always confined to the bearded part of the face. Sometimes it is limited to the upper lip, or to the side of the chin, or to a part only of the submaxillary region. It has been observed, though rarely, upon other parts of the body. The parts most frequently attacked after the bearded part of the face are the eyebrows, then the scalp, and, lastly, the other hairy parts of the body, especially the axillæ and pubis.

The eruption in the majority of cases is preceded by a chronic moist or dry eczema; sometimes only a chronic hyperæmia is present, or an over-irritability of the cutaneous tissue. When it appears primarily on the upper lip, it is usually preceded by a nasal catarrh, the discharge from the nose irritating the skin, and producing a congestion or an eczema, which, in its turn, is followed or accompanied by sycosis. Here it generally remains limited in area, rarely extending to the cheeks.

Sycosis of the beard is generally ushered in with somewhat severe local symptoms. It is preceded or accompanied by a feeling of heat, smarting, and a painful, pricking sensation, with swelling or intumescence of the part. Sometimes the attack is so severe, and the local inflammation so

great, as to produce swelling of the lymphatic glands in the neck. The eruption makes its appearance in the form of papules and tubercles of greater or less size, ranging from that of a millet seed to that of a pea, isolated or collected in groups.

In acute cases, and with the first outbreak of the eruption, the tubercles are generally seated near each other; but in chronic cases the local symptoms are not so severe, and the papules and tubercles are oftener isolated and fewer in number. In subsequent outbreaks new papules and tubercles appear, and, if seated in the same locality, may unite with the former ones and form connected infiltrations. This occurs only where the eruption is seated on parts thickly studded with hairs, and a considerable number of the follicles are affected by the inflammation. The eruption from a single outbreak rarely appears over a large surface, and subsequent attacks are not necessarily confined to the same location. The papules and tubercles are of a red color, somewhat conical in shape, and generally elevated. They afterward increase in size and the majority become converted into pustules. In scrofulous individuals the pus formation proceeds slower and is not so abundant as in the robust; in chronic cases it also forms slower than in acute attacks; and, lastly, it collects usually more rapidly in the perifollicular region of stiff hairs than in that of fine ones. Each papule, tubercle, or pustule, whether raised above the level of the skin or not, is perforated through its centre by a hair. This perforation is characteristic of the disease and is our principal aid in forming a diagnosis. If the hairs are not shaven, the pus dries into crusts; these crusts are generally thin and isolated, seldom forming thick crusts like those of impetiginous eczema. Upon their removal, a circular funnel-shaped excavation is observed, with a hair in the centre and the base formed of pus. From the inflamed condition of the tissue surrounding the hair during the papular stage great pain is caused by epilation; but in the late pustular stage the hairs lie loosely in the follicle and are easily extracted. If not removed the ever increasing accumulation of pus around and

within the follicle, and its subsequent movement to the surface through the space previously occupied by the hair-sheaths, or the immediate surrounding tissue, finally expels the hairs, and the part heals with or without cicatricial tissue formation. If the hair follicle is completely destroyed by the inflammatory process, permanent alopecia will result. Sometimes the inflammation is such that there is complete destruction of the cutis, hair follicles and sebaceous glands, and healing by cicatricial tissue. This, however, rarely occurs, and the only evil result generally of even a long continued chronic sycosis is destruction of the hair follicles and sebaceous glands, with consequent permanent alopecia. Even this, to any considerable extent, is not a frequent occurrence; yet a limited number of follicles are usually destroyed, if the suppuration has been at all extensive, and epilation not performed at the proper time.

The papules, tubercles, and pustules are generally isolated; but sometimes they are collected, and accompanied by infiltration in the intervening skin and subcutaneous tissue. This occurs only when the affected part is provided with numerous hairs, or in acute attacks accompanied with considerable local inflammation. When they are thus united by infiltrations, papules or tubercles no longer arise in that region as long as the infiltration exists to any considerable extent; but new pustules arise in the infiltrated tissue, and the pus, passing to the surface, becomes dried up, forming brownish or yellowish scabs, perforated with hairs. On removal of these scabs, we find underneath, as in the case of the scabs formed on isolated pustules, circular, funnel-shaped excavations, corresponding in number to that of the follicles, and each excavation is perforated by a hair unless this has been extracted in the removal of the crust.

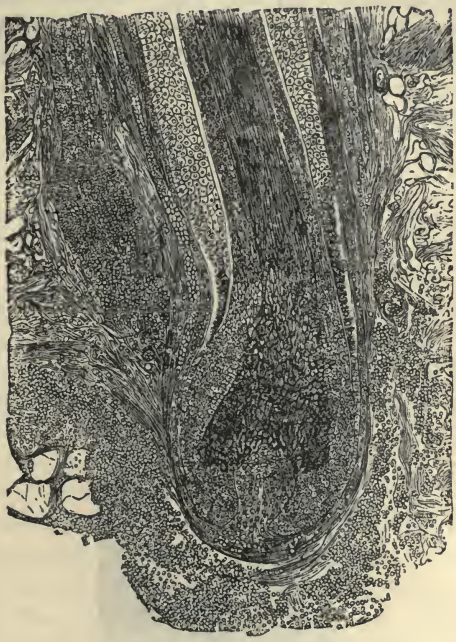
In no case does the peri-folliculitis occur around all the follicles of an affected area, but only around a few, and those often the more deeply seated ones. The disease is usually a chronic one, lasting weeks or even years, and is prolonged by successive outbreaks occurring at irregular periods, each outbreak, after having completed the pustular stage, to be suc-

ceeded by a similar eruption upon the same or some other region, and so on. Upon the termination of the disease the part regains its normal character, or there may be more or less permanent alopecia or scars.

Etiology.—The disease usually occurs between the ages of twenty-five and fifty ; generally it is preceded by eczema or chronic hyperæmia, or the skin is in irritable condition from internal or external causes. The stiffer the hair the more easily do they produce a perifolliculitis. Any thing that produces deranged circulation, or increased irritability of the skin can cause the disease ; thus, shaving, especially with a dull razor, eczema, exposure to strong rays of heat, dusty substances, irritating powders, cosmetics, etc., etc. These all act in the same way, producing an irritable condition of the skin, and the stiff hairs acting upon this irritable skin produce an inflammation in their immediate neighborhood—a perifolliculitis. The stiffer the hair the more liable is it to produce an inflammation.

Pathology.—Sycosis is primarily a peri-follicular inflammation of the skin. The first changes which take place occur around the follicle in the peri-follicular region, and are those which are usually observed in vascular connective tissue inflammations. The transuded serum penetrates the hair follicle, and, as the inflammation proceeds and the pus and serum increases in quantity, the follicle becomes more and more affected. Its sheaths become softened and more or less destroyed, and a portion of the pus may enter the follicle through the ruptured sheaths. The cells of the external root sheath become swollen and soon begin to break down, similar changes occur in the cells of the hair root ; they swell, the protoplasm becomes more granular in appearance, and there is evidence of commencing destruction. After the rupture of the follicle sheaths, or even before, the cells of the hair root and of the root sheaths rapidly become broken up and changed by the transuded serum entering the follicle. If pus corpuscles have also entered the follicle the hair root is infiltrated with a sero-purulent matter ; it does not, however, in every case enter it

in large amount. In the pustular stage the principal changes take place within the follicle; the hair root and its sheaths are broken down and separated from the follicle sheaths, so that the hair lies loosely within the follicle, and can be easily extracted.



Explanation of Fig. 37.—Early appearance of the pustular stage. Round bodies—pus corpuscles—are present in great number around the fundus of the follicle, and the follicle-sheaths and external root-sheath are partly broken down and separated. Toward the neck of the follicle the changes are less and less.

As the inflammation progresses the connective tissue around the follicle becomes crowded with pus cells as far as the surface of the skin. If the hair is allowed to remain within the follicle until expelled by the accumulating pus, the root-sheaths and soft parts of the hair are destroyed, and only the hard part remains. The follicle-sheath, and the peri-follicular tissue are more or less destroyed, and the Malpighian layer becomes rup-

tured at the neck of the follicle. The pus reaches the surface by breaking through the epidermis near the hair. Some occasionally passes to the surface between the hair-shaft and the follicle-sheath. The cells from which the hair grows seem to resist the inflammatory process more than the other cells of the bulb, which accounts for the slight amount of permanent alopecia generally occuring in sycosis. The cavity left after the extraction of a hair whose follicle is not completely de-

Explanation of fig. 38—Shows the nature of the cavity, when permanent alopecia results. The entire follicle is destroyed.

stroyed, contains pus along its entire walls and base. The follicle-sheaths are more or less destroyed, but the papilla remains from which a new hair will grow. When permanent alopecia results, both the follicle-sheaths and the base of the follicle are completely destroyed as shown in figure 38.

Such a cavity becomes obliterated by cicatricial tissue.

Such are the pathological changes occurring in simple un-

complicated sycosis; if eczema is present the changes are the same, but the root-sheaths, and follicle-sheaths are acted upon in their entire length at the same time.

The sebaceous glands may also become affected, though not at so early a stage of the disease as the fundus of the hair, and the whole gland may be destroyed by a process of molecular retrograde degeneration. The sweat glands generally escape, but the epithelial cells may become detached or the gland even destroyed. In the most severe form of sycosis, there is more or less destruction of the hair-follicles, sebaceous, and sweat glands, and of the other tissues of the part, and substitution by cicitrical tissue.

Diagnosis.—There are few diseases of the skin whose characters are more sharply defined than those of sycosis, yet some other diseases are frequently regarded as sycosis merely because they are located on the bearded part of the face. It is not a frequent disease, and hence the chances are that an eruption, when seated on the face, is not sycosis, but one of the more frequent diseases of this region, as eczema or acne. The diseases with which it is generally confounded are tinea trichophytina barbæ (sycosis parasitica), acne, eczema and syphilis.

Tinea trichophytina barbæ is a parasitic affection, the fungus being that of ordinary ringworm, the characteristics of the eruption depending upon the anatomical characters of its seat. The fungus passes down into the hair follicle, then into the shaft of the hair, and even outside the follicle. It is easily detected in recently altered hairs, but generally absent where much pus is present. It is generally preceded by a red, itching, or scaly spot of ringworm. The tubercles present arise without the pricking, burning sensation present in sycosis, and are produced continuously and not by "outbreaks." The hairs are early affected, becoming opaque, brittle, loose and easily extracted. The part is much indurated, and the tubercles are larger than in sycosis. In the majority of the cases I have seen, the tubercles were large, prominent and studded with hairs which lay loose in the indurated mass. It begins imperceptibly, proceeds slowly and steadily; whilst sycosis

begins with severe local symptoms, pain and swelling of the part, which soon subside, but reappear in a few days accompanied by a new outbreak of the eruption. When several tubercles of the parasitic disease lie closely together they form a circular mass, their margins are sharply limited, the surface is uneven, fissured and studded with loose hairs; the base is broad, firm and lies deep in the subcutaneous tissue. Patches of ringworm are also generally present on some other part of the body or among the patient's companions. If any doubt still remains, a microscopical examination of the proper hairs will decide the point.

Acne is not confined to the bearded part of the face, but appears on the forehead, nose, shoulders, etc. It is met with generally in young persons, and the papules and pustules are seldom perforated by hairs.

Syphilis is known by its concomitants, the arrangement of the papules in rows, their dark color, slow development, absence of pain, and presence of the eruption on other parts of the body. In an ulcerative syphilide, the loss of substance, the shape of the ulcers, and the absence of pustules perforated by hairs suffice for the diagnosis.

In eczema there is either a moist, red surface with itching and exudation which dries to scabs, or there is only a harsh, dry skin with furfuraceous desquamation. The eruption is not limited to the parts provided with thick hairs, but is also generally present on other parts of the face. If papules or pustules are present they are not as a rule perforated by hairs, though frequently a few such pustules are to be observed. In uncomplicated sycosis all pustules are perforated by hairs.

Prognosis.—The natural duration of the disease varies greatly in different persons; sometimes it lasts only a few weeks whilst in other cases it may continue months or even years. In syphilitic and strumous subjects it is very obstinate. The patient's occupation often controls the prognosis. The greater the amount of pustulation, the greater is the liability of the follicles to be destroyed, and permanent alopecia produced. Relapses are very liable to occur; though they may not, if the

exciting and predisposing causes be avoided. If the disease depends upon the occupation of the person, a relapse is certain to occur unless this be changed.

Treatment.—Though sycosis is a local disease, yet certain conditions of the general system predispose to its development, aggravate the disease when present, and prolong its duration. These conditions must receive due attention if a rapid cure is desired or relapses prevented. The general nutrition of the patient must be attended to, and any morbid condition, as rheumatism, intestinal disorders, syphilis, struma requires its appropriate treatment. A strumous condition of the system especially aggravates the disease, and causes an unusual amount of pus to be produced. Eczema, if present in the same locality, must be treated simultaneously with the sycosis, as the latter can not be cured without the removal of the former also. In sycosis of the upper lip the disease is generally produced and kept up by a nasal catarrh, and it is almost impossible to cure the former so long as the discharge from the latter continues to irritate the part. Relapses may often be prevented by attention to the special predisposing cause at work in a given case. If the patient's occupation plays an important part in producing the eruption, it should, if possible, be changed. Exposure to excessive heat or cold should be avoided, also the use of cosmetics, snuff, and other irritating substances. Cleanliness is an excellent prophylactic in this affection. When the disease is present, the local treatment depends upon the condition of the part affected. In the acute stage the treatment is that for acute inflammation of the skin in general. Lead and opium solutions, warm or cold water applications, as may be most agreeable to the patient, or poultices should be applied, and this antiphlogistic and soothing treatment continued until the acute symptoms subside. Afterward we must still continue to allay irritation of the skin, as this is the principal predisposing cause of the eruption. We may use simple rose ointment, which protects and prevents irritation from external agents, or if the skin is not very irritable, combine with it

oxide of zinc in the strength of about twenty to forty grains to the ounce of ointment. If the disease has lasted some time, astringent ointments should be employed. Diachylon ointment, either alone or in combination with zinc ointment, should be used. The greater the irritability of the skin, the greater should be the proportion of the zinc to the diachylon ointment. In the more chronic stage our object should be to reduce irritation, produce absorption of effused products, and remove the existing inflammation. If scabs are present they must be removed by poultices or oily applications before commencing other treatment. If the patient has a long beard, and will not permit its being removed, the sycosis will be much more difficult to cure than if the beard is short, though its presence is not an insuperable object to successful treatment. Diachylon ointment is a most excellent remedy in this stage also, and can be used alone or in combination with zinc ointment, or if there is much inflammatory thickening present it is better to add in addition the white precipitate ointment. We frequently employ the following:

℞. Ung. Diachylon (Hebra),
" Zinci Oxidi . . . . . āā ʒ iss
" Hydr. Ammon. Chlor. . . . ʒ iii
Bismuthi Sub-Nit. . . . . ʒ iss
M.

Whether the part affected should be shaven or not before applying the ointment, depends upon the individual case. If shaving does not irritate the skin too much, it should be performed. With many persons it is such a painful operation, however, that it is much better to clip the hairs as short as possible with scissors. The ointment should be spread thickly on cloth and bound on the part, as it then acts more powerfully and efficiently than when simply rubbed in.

Ointments containing sublimed sulphur or the iodide of sulphur, in varying proportions, according to the amount of induration and irritability of the skin, are of service in some chronic cases; but must not be made too strong.

In strumous subjects the local application of cod liver oil, often acts more beneficially than ointment of lead, sulphur or mercury. The internal administration of sulphide of lime in small doses, frequently repeated has been very strongly recommended by some dermatologists (Piffard).

After the acute stage is passed epilation is not only very useful in reducing inflammation, but is absolutely necessary in the treatment if permanent alopecia is to be prevented. Some authors say they derive but little benefit from it, but I believe, if it is performed at the proper time, the result is most beneficial. To remove the hairs during the papular stage while they are still firmly seated in the follicle, increases temporarily the irritation, as their extraction causes great pain ; but during the pustular stage they are generally easily extracted, and when the operation is performed not only has the pus a free exit but the follicle is thereby frequently saved, and permanent alopecia prevented. Though extraction during the papular stage causes pain and temporarily increases the irritation, yet I believe the evil resulting from the additional irritation thus produced is more than counterbalanced by the good resulting from the free exit allowed to the pent-up pus and the removal of the irritating hairs in the chronic stage. Fomenting the part with hot water lessens the pain produced by the operation. In epilating, but a single hair should be seized by the forceps at one time, and traction made in the direction of the long axis of the hair follicle. In cases of chronic circumscribed sycosis, it is better to remove all the hairs from such a spot, even if the operation causes considerable pain.

This removal of the hairs is a much better procedure than opening the pustules with a knife. In the acute stage the hairs should be extracted from the pustules only, and not from the papules. After epilation has been performed the appropriate ointment should then be applied twice in every twenty-four hours, and kept constantly on the part. After the disease has disappeared, the skin, if dry, or harsh or scaly, should be kept soft by a mixture of glycerine, alcohol and water. We use the following proportions :

℞. Glycerini..... ℥ ii.
Spir. vin. rect..... ℥ vj.
Aqua Rosæ..... ... ℥ iii.

Sig. To be applied two or three times a day. M.

This treatment, by sooothing applications in the acute stage and epilation and astringent ointments, with or without the addition of a mercurial preparation, according to the amount of infiltration present, and appropriate internal treatment, will cure the majority of cases; except the destructive form, in a short time, provided the predisposing cause is removed.

IMPETIGO.

Definition.—An acute inflammatory affection of the skin, characterized by the formation of isolated, rounded, elevated pustules from the size of a split pea to half an inch or more in diameter, seated upon a slightly inflamed, non-ulcerating base, and healing without resulting pigmentation or scar.

Symptoms.—Most dermatologists regard impetigo as a variety or complication of some other skin disease, but with some others, I prefer to describe it as a separate affection. The eruption is sometimes preceded by slight febrile symptoms, though they are never well marked. The lesion commences as a vesico-pustule, and when fully formed is of the size of a small split pea to that of half an inch or more, seated upon a slightly inflamed base and surrounded by a slight areola. The number present varies from one to twenty, thirty, or more and they appear either simultaneously or successively. The vesico-pustules soon become pustules, roundish in shape, elevated, well distended by the contents, somewhat acuminated, and never umbilicated. Even when closely seated together they do not tend to coalesce. The contents are at first sero-purulent, afterward purulent, or occasionally bloody, and yellow in color, except when blood is present. The pustules have no tendency to rupture, and the contents are either more or less absorbed, or dry to thin yellowish crusts. Removal of the crust shows an inflammatory non-ulcerating surface, secreting a thin puriform

liquid. When the dried crusts fall off there is an erythematous base, which afterwards disappears without leaving pigmentation or scar. Itching is generally very slight. The parts most frequently attacked are the face, hands, feet and lower extremities, but the eruption may appear on any part of the body.

Anatomy.—Impetigo is a circumscribed superficial inflammation of the skin, the nutrition changes being limited to the upper and papillary portion of the corium. It is especially a corpuscular inflammation, the embryonic or pus corpuscles being present in great numbers in comparison to the amount of serum. The origin of these corpuscles is from the circulation and from the tissue of the inflamed region, and not, as stated by Hyde, from the corneous layer of the epidermis, as it is the latter which forms the covering of the pustule.

Etiology.—The disease is met with almost exclusively in children, and especially among those who are uncleanly and improperly fed. I have noticed that the children frequently have an acid dyspepsia or other digestive trouble. In a number of cases it accompanied convalescence from some other disease.

Diagnosis.—The description I have given of impetigo corresponds with that given by Dr. Duhring, and is to be distinguished from impetigo contagiosa, ecthyma, pemphigus and pustular eczema.

Impetigo contagiosa is primarily vesicular, the pustules are flat, often umbilicated, and when closely seated tend to coalesce. The pus is also auto-inoculable and contagious, and the eruption is frequently present on several children in the same family or society.

In ecthyma the pustules are flat, with a hard inflammatory base and considerable areola. The crusts are flat, thick and dark in color, and the skin beneath excoriated.

In eczema pustulosum the eruption is generally of long duration, and there is more or less infiltration of the skin, the pustules are small, numerous, itch greatly, and tend to coalesce.

Prognosis.—The prognosis is favorable, as, with appropriate treatment, the eruption soon disappears.

Treatment.—The treatment is local and general. If the pus-

tules are distended they should be opened, the surface cleaned with a disinfecting solution and an astringent, and protecting salve, as zinc salve, with or without carbolic acid, applied. Pure air, cleanliness and proper food should be ordered. Special attention should be given to the condition of the intestinal tract and any acid dyspepsia removed by proper food and antacids.

IMPETIGO HERPETIFORMIS.

Definition.—An eruption characterized by the formation of small yellow pustules, arranged in groups or rings, forming patches which increase in size by new pustules forming about the periphery ; the pustules dry to yellow flat scabs ; the skin beneath being red, moist, and excoriated, but not ulcerating, and the whole process accompanied by considerable constitutional disturbance.

Symptoms.—This disease which is very rare—eight cases only have been observed in the Vienna clinic—is met with almost exclusively among pregnant women, and is characterized by the development of pin-head sized opaque, later yellow, pustules, which are arranged in groups or rings, to form small patches. The pustules dry to dark brown scabs, whilst new pustules of similar character arise and form one or more rings around the periphery. These pustules also dry to scabs and unite with the central scab. This arrangement of the pustules in the annular form gives the eruption somewhat the appearance of a herpes iris or circinatus. The skin beneath the crusts is covered with new epidermis or is red, moist, infiltrated, excoriated, like in eczema rubrum, smooth or papillary, but not ulcerating. From the primary seats of eruption the disease spreads by the formation of new pustules at the periphery of the constantly enlarging patch. From this peripheral spreading neighboring patches coalesce, and finally the eruption in three or four months may cover a large area, and the cutaneous surface be then swollen, hot, covered with crusts and having fissures or excoriations. After several weeks' duration there may be spon-

taneous cure of the parts first attacked, with an outbreak on previously healthy places.

The eruption appears especially on the anterior surface of the abdomen and inner surface of the thigh, but may appear on other situations, and has been observed on the mucous membrane of the tongue, forming a circumscribed gray patch with depressed centre. In Hebra's cases, there was a continuous remitting fever, with intercurrent rigors, and high fever and dry tongue, preceding a new outbreak of pustules.

Dr. Duhring describes several cases of a milder form of this disease, the eruption being vesicular and bullous, or pustular, or pustular and bullous combined, or these lesions alternating. The pustules showed a tendency to group and the patch to extend by peripheral new formation of pustules. The amount of constitutional disturbance was variable, the itching was intense, there was a tendency to recurrence of the eruption, and the cases were in non-pregnant women. I have lately observed a well-marked case of this eruption in a boy ten years of age, in whom the eruption consisted of papules, vesicles, pustules and bullæ. The spots spread by the formation of vesicles in a ring form around the central papule, vesicle or bulla, or spread as in cases of ringworm. The vesicles or bullæ contained at first clear liquid, which afterward became purulent and finally dried to crusts. The eruption was general over the whole body except the palms of the hands and soles of the feet, and the bullous form was much more marked on the anterior than on the posterior surface of the body.

Dr. Heitzman has described a case occurring in a woman at the climacteric period, in whom, during the first ten weeks of the disease the eruption was that of impetigo herpetiformis, and afterward resembled that of an ordinary pemphigus. The case proceeded to a fatal termination.

Anatomy.—Newman found in one case dilatation of the veins and lymphatics, round cell infiltration in the cutis, and the cells of the sweat glands increased.

Etiology.—As it occurs almost exclusively in pregnant women, it probably has some relation to the condition of the nervous

system. Heitzman s case would show a close relationship with the causes of pemphigus.

Diagnosis.—The eruption is to be diagnosed from herpes, eczema and pemphigus.

In herpes the eruption consists of groups of vesicles, and not pustules, with a typical course and localized on certain parts of the body.

Eczema is a papular or vesicular eruption, and the disease never spreads by annularly arranged pustules. There is also no constitutional disturbance.

In pemphigus the size of the bullæ, their manner of origin their location and the history of the case are sufficient for the diagnosis.

Prognosis.—Nearly all of Hebra's cases died within a period of from one to three months. The fœtus was prematurely expelled, but that did not have any effect upon the course of the disease.

Treatment.—The treatment must be conducted upon general principles, until we know more of the etiology of the disease. The uterus should probably be emptied as soon as possible, and the general nutrition maintained to resist the effects of the remittent fever. Hebra's treatment consisted in cold applications, continuous baths, salves and general measures, but it did not have any favorable effect upon the disease.

ECTHYMA.

Definition.—An inflammatory affection, characterized by the formation of a variable number of generally large, isolated, flat pustules, seated upon a hard, deep-seated inflammatory base; the pus drying to hard, dark colored, firmly adherent scabs, beneath which there is superficial ulceration, followed generally by pigmentation and slight cicatrices.

Symptoms.—Many dermatologists deny the existence of ecthyma as a special cutaneous disease, preferring to regard it as an accidental and secondary condition to other affections. The pustules possess, however, sufficiently defined characters to

entitle them to a separate description and name even if they were always, which they are not, the consequence of some other skin disorder.

The eruption may appear on any part of the body, but it is most frequently observed upon the extremities, and especially upon the lower ones. In children it is often seen upon the chest and back.

Its course is either acute or chronic. In acute ecthyma the eruption is sometimes ushered in by febrile symptoms, together with heat, itching and pain at the seat where the pustules will arise. These places are at first reddish raised spots, from the size of a pea to an inch or more in diameter, or even larger, which quickly pustulate and in a few days discharge, the pus drying to a hard, thick, firmly adherent scab. The pustules are few or numerous, isolated, roundish in form, sharply limited, and the scab varies in color from yellow to a very dark brown, depending upon the amount of blood intermixed with the pus, and is firmly adherent to the inflamed skin beneath. Upon removal of the scab there is seen to be superficial ulceration of the skin present; the secretion is generally of a yellowish, purulent, tenacious character, upon the removal of which the base of the ulcer presents an inflammatory granulating surface. When the scab is cast off in the healing process a slight cicatrix and pigmented spot remain, which afterward disappear.

The pustule is seated upon a hard, inflammatory base, and the surrounding areola is generally of considerable extent, of a bright reddish color and tender to the touch. The lesions appear either simultaneously or successively, and the whole process may last two or three weeks or longer. In cachectic persons the pustules are large, the areola broad, and dark red in color, the scabs dark-colored, and the secretion beneath of a sanious character.

In chronic ecthyma the pustules are of the same character and occur in the same situations as in the acute form, and is the condition generally met with, acute ecthyma being rarely observed. It is nearly always the consequence of some other pathological condition of the skin; the exciting cause being

generally direct irritation from scratching in persons badly nourished or affected with scabies, pediculi, etc. The pustules are developed successively and the disease may last as long as the original predisposing affection. When seated on the lower extremities of old and badly nourished subjects, chronic ulcers may result.

Anatomy.—Ecthyma consists in an acute intense inflammation of the upper layers of the derma, attended by slight loss of sub-epidermal tissue, an inflammation more intense and destructive than that of impetigo, and not so deep as in furunculus. It is a pustular inflammation from the commencement, with the ordinary nutrition changes occurring in vascular connective tissue inflammation, the amount of pus production depending upon the intensity of the inflammation, and the condition of general nutrition of the individual. The affected part heals by cicatrization, and the spot is often temporarily darkly pigmented.

Etiology.—The causes are predisposing and exciting. The predisposing causes are all those which lead to mal-nutrition, as insufficient or improper food, bad air, uncleanliness, etc. I have seen a number of cases in children's hospitals from bad air and improper food with consequent deranged digestive system. The exciting causes are those of dermatitis in general, as heat, scratching, pediculi ; irritation, in grocers from sugar, and in bricklayers from lime. It is often met with in scabies, especially upon the buttocks, and rarely in eczema.

Diagnosis.—Ecthyma can be confounded with impetigo, impetigo contagiosa, impetigo herpetiformis, eczema pustulosum, furunculus and flat pustular syphiloderm.

In impetigo the inflammation is more superficial, the pustules are sero-purulent, rounded, elevated ; the discharge yellowish, viscid ; the scabs light colored, softer and not firmly adherent to the skin beneath. There is no loss of derma, no hard indurated base and only a slight areola. The pustules are generally numerous, and often confluent.

In impetigo contagiosa, the lesion is a vesico-pustule, with a slight areola, the crust is superficial, flat, roundish, yellowish, or straw-colored, and but slightly adherent.

In impetigo herpetiformis the arrangement of the lesions in groups, or in an annular form, their mode of spreading peripherically, their tendency to become confluent and the superficial character of the process make the diagnosis between the two diseases easy.

In furunculus the inflammation is deeper, there is more loss of tissue, there is a central core, the course is slower, and there is little or no scab formed.

In the flat pustular syphiloderm, the inflammatory symptoms are much less intense, pus forms much slower and dries to thicker scabs, often arranged as superimposed layers, like an oyster shell, the ulceration is deeper, the base dirty-looking, and covered by a thick puriform secretion. Other symptoms of syphilis are also always present on other parts of the body.

Prognosis.—The prognosis is favorable, the cause being generally removable. When occurring in cachectic persons, and not the result of uncleanliness or pediculi, the disease may last a considerable time.

Treatment.—The treatment is general and local, the former being of more importance than the latter. The general treatment has for its object the removal of the predisposing causes and the improvement of the general nutrition of the body. The etiology of the disease is to be our guide. Pure air, change of climate, large, well ventilated rooms, bathing, recreation, cleanliness, good diet, especially easily digested animal food, and in some chronic cases in old persons claret wine, are requisite. In children special attention must be directed to the intestinal tract and food of the proper quality and quantity given. Acid dyspepsia or indigestion must be removed.

In chronic cases especially, in addition to the hygienic means enumerated above, medicines of the tonic class are to be given. Iron, quinine, strychnine, hypophosphites, the bitter vegetable tonics or mineral acids are to be prescribed according to the special indications in individual cases. All the organs of vegetable life should perform their physiological functions normally, digestion should be easy and the bowels act regularly. If the patient's occupation is the exciting cause, as in the case of

grocers and bricklayers, it may be necessary for a time to relinquish it.

The local treatment depends upon the cause and upon the condition of the part. If the disease is the result of scabies or pediculi in an ill-nourished subject they must be removed, upon which pustules will probably cease to form. In the acute stage, alkaline baths, emollients, anodyne applications, as a solution of lead and opium may be employed. When crusts have formed they should be removed, the base of the ulcer disinfected with a solution of carbolic acid or with iodoform, and an ointment of oxide of zinc applied. Generally zinc ointment, with ten drops of carbolic acid to the ounce of ointment is the only application necessary. The ointment should be changed two or three times a day. Plasters should not be applied.

PITYRIASIS RUBRA.

Syn.—Dermatitis exfoliativa. (Wilson.)

Definition.—An inflammatory disease, involving in its course generally the whole surface, and characterized by its deep red color, absence of papules, vesicles or moist exudation, and by an abundant exfoliation of thin whitish scales.

Symptoms.—This is a rare disease, appearing first generally on the body, and begins as red, scaly, rather circumscribed patches and spreads rapidly over the greater part or whole of the body. When fully developed the skin appears of a uniform deep red color, disappearing partly upon pressure, leaving behind a yellowish tinge. The affected part is covered by very thin, whitish scales, which are rapidly and continuously formed and exfoliated. The scales in many cases are very large, some being an inch or more in diameter and attached to the skin by the central part only. In other cases they are branny in character. The skin of the palms of hands and soles of feet is pale or injected and covered with a layer of shining epidermis. If removed, the skin beneath has a shining aspect, without any signs of moist exudation. In severe cases

the amount of scales exfoliated in 24 hours may amount to two or three handfuls. The amount, however, varies very greatly in different cases and at different times in the same case. The skin is not thickened except in some chronic cases, though there is probably always some exudation present. Sometimes œdema of the lower extremities occurs, which perhaps depends upon the condition of the kidneys or general system. The nails are frequently attacked and become uneven and opaque and even softened. Itching in many cases is very slight, but the patients complain of tenderness of the skin and suffer from cold or chilliness. The temperature is elevated. The disease may be acute or chronic, lasting months or years.

In the severe cases it proceeds after a few years to atrophic changes in the skin, rendering it too small for the body. In consequence of the tension of the skin the mouth can be only imperfectly opened, the lower eyelids become ectropic, the fingers half bent; on the extensor surfaces of the knee and elbow the skin is smooth, shining, thinned and difficult to raise in a fold, also the skin of the soles of the feet, preventing walking on account of the pain. The hair of the whole body becomes thin and falls out, the nails become thin and brittle, or thickened and caseous degenerated. (Kaposi). These cases die of marasmus, with or without complicating pneumonia, diarrhœa or tuberculosis. In mild cases the constitutional symptoms may be absent.

Pathology.—According to Hans Hebra, who examined microscopically sections of skin in two severe and fatal cases, appearances of a chronic inflammatory infiltration of the skin were present. In one case there was a rich cell infiltration in all the layers of the skin. The cells filled all the tissues in great numbers, being most abundant immediately beneath the epidermis. In the other, in some parts nothing so marked was found; immediately under the thickened corneous layer there was a thin layer of mostly distorted rete cells richly filled with infiltration cells. Then followed a flat, thick, connective tissue layer with fewer cells, and underneath this a layer of thick.

elastic tissue often twice the thickness of the three layers combined. Here the infiltration was less, but there was a rich production of a yellowish brown granular pigment. Generally all signs of papillary structure were absent ; the different layers above described lying directly upon one another, either straight or wavy. In some places an elevation of the epidermis and thickening of the rete was present without possessing the characteristic structure of a papilla.

The bloodvessels in the sub-epidermal tissues were surrounded by an abundant cell infiltration. The sweat glands were entirely absent, and only occasionally a sebaceous gland was seen, hence the great dryness of the skin during life. The hairs were very scanty and the sheaths above the papillæ, infiltrated with cells. In the milder cases the cell infiltration was less, the mucous layer more normal, the papillary body intact, and the glands and hair had their normal appearance. There was absence of pigment collection and elastic fibre productions.

In long standing pityriasis rubra the normal structure of the skin is entirely changed from atrophy.

Diagnosis.—The disease is to be diagnosed from lichen ruber, eczema squamosum universale, psoriasis universalis and pemphigus foliaceus.

Lichen ruber is a papular affection,and can be confounded with pityriasis rubra only after it has existed for some time, and the papules have coalesced, and are associated with a production of a large quantity of desquamating epidermis. In the periphery, however, isolated, firm red papules will be found, which never appear in pityriasis rubra. In lichen ruber there is thickening of the skin.

From eczema it differs by the absence of thickening of the skin, vesicles, papules, weeping or scabs, in the formation and character of the scales, and in its universality ; eczema rarely occupying the whole surface of the body. Eczema, without treatment, or by treatment, always disappears.

Pityriasis rubra as a rule does not disappear, and the unpleasant symptom of tension at first felt continues to increase

until immobility results, and great pain is produced from the resulting fissures.

Psoriasis is very rarely universal in its extent, and begins as isolated elevated epidermic papules, which spread peripherically, healing in the centre and are sharply limited in the periphery, whilst pityriasis rubra becomes general without the production of papules or these circular or gyrate forms of eruption. In psoriasis the scales are bright, thicker, more in layers, and seated upon an elevated base. There is also more or less thickening of the skin beneath the scaling patch of psoriasis.

In pemphigus foliaceus the distribution and the exfoliation may be similar in appearance to that of pityriasis rubra, but bullæ are always formed in this affection.

Prognosis.—According to German authors, the disease is invariably fatal. The more severe and universal form may be regarded as invariably fatal. In some of the milder cases, in which the eruption appears in patches, a more favorable prognosis may be given.

Treatment.—Treatment seems to have but little effect upon the disease. The internal treatment is to be conducted upon general principles, and will vary with the individual case. Many of the patients are of a depraved constitution, with lowered nutrition, and die with pulmonary disease or under symptoms of general marasmus. Iron, quinine, cod liver oil, arsenic, carbolic acid and linseed oil may be given according to the indications in individual cases. Linseed oil and carbolic acid have occasionally been of some benefit. Externally benefit has been observed from continuous envelopment in linseed oil or cod liver oil.

FURUNCULUS.

Definition.—An acute inflammatory affection of the skin, characterized by the formation of one or more pea to egg-sized, circumscribed, sharply limited, elevated, indurated inflammatory tumors, situated in the corium and subcutaneous tissues,

and rapidly passing to suppuration and with expulsion of the central necrosed part as a core.

Symptoms.—The first symptoms are those of pain in the part, and if the finger be passed over it a hard, deep-seated infiltration can be felt. Soon there appears a small, rounded, reddish spot, painful to pressure and slightly elevated above the general surface, and in three or four days this increases to the size of a hazel-nut or larger, forming an elevated, hard, circumscribed inflammatory tumor with a small pustule on the apex. The small pustule corresponds frequently to the seat of the opening of a follicle, and is occasionally penetrated by a hair.

The inflammation having reached this extent the tumor may disappear by the point of the apex drying up and the inflammatory infiltration disappearing, producing what is termed a blind boil.

Blind boils occur in those cases in which the inflammatory process is not very intense, and especially in old, weakly persons. Usually however the inflammation does not terminate in this manner, but passes on to suppuration, with necrosis of the central portion of the tumor; or probably, more properly, necrosis of a gland occurs first, and this necrosed tissue sets up the surrounding inflammation, which generally rapidly passes on to suppuration.

With this increase in the inflammatory process the tumor increases in size, becomes of a dark-red color, circumscribed, with great induration, pus forming in the centre of the apex and a few pustules or vesicles on the apex. It is very painful upon pressure, pulsates strongly, and is accompanied by febrile symptoms.

The tumor gradually becomes purulent and in seven or eight days opens and discharges a bloody serous liquid. The central core is not expelled until a day or two later, when the opening is larger and the core itself smaller, unless pressure be made and it be forcibly expelled. It is of a yellowish-green color, tough and infiltrated with pus.

After expulsion of the core the walls fall together, and after discharging for a few days the part heals by cicatricial tissue,

leaving a small cicatrix in the centre of a pigmented spot. This gradually disappears and nothing remains unless a trace of the cicatrix.

The pain in furuncles continues to increase in severity until the abscess opens. The comparative amount of pain in different cases depends greatly on the seat of the affection ; a furuncle of the perinæum producing more pain than one in the gluteal region. The pain can be so great as to sensibly undermine the constitution of young children and old, weakly persons.

There may be but a solitary furuncle or there may be a number, and they may appear simultanously or successively. When appearing successively for some time the disease is called furunculosis.

Anatomy.—Furunculus is a circumscribed phlegmon, having its origin around a sebaceous or sweat gland or a hair follicle, or even in the subcutaneous tissue (Kochmann). An embolus or a thrombus probably occurs in the capillaries surrounding the glands, leading to necrosis of the gland, and this necrosed tissue in its turn causing consecutive inflammation and plastic infiltration around the necrosed tissue, and the elimination of this latter by suppuration, makes up the furuncular process.

The inflammation has no tendency to become diffuse, but remains circumscribed and of limited extent. The plastic infiltration is succeeded by a purulent infiltration, which finds its way to the free surface and is discharged, carrying with it the core. After the discharge of the core a cavity is left, with hardened walls, which heals by granulation.

Etiology.—The causes are either local or general ; the inflammation very frequently depends upon local irritation of the skin, and accompanies those diseases attended by itching, as prurigo, eczema, and pediculosis ; long continued irritation from clothes, salves, vesicatories in old persons, irritating effects of cold baths, especially shower baths, are frequent causes. When symptomatic, they occur in connection with derangements of the intestinal tract, as chronic dyspepsia, diabetes, retained urea, Bright's disease, tuberculosis, scrofulosis, gout, poor nutrition and in convalesence from severe febrile conditions.

Diagnosis.—Furuncles may resemble ecthyma, pustular syphiloderm and carbuncle.

In ecthyma the inflammation is not so deep, there is no central core, and there is a considerable areola of inflamed tissue surrounding the ulcerated area.

In syphilis the history of the case, the absence of the core, the slow course, the infiltrated narrow margin, the tendency to continuous ulceration, and the presence of tubercles or papules on other parts of the body, render the diagnosis easy.

As compared with carbuncle, furuncle is smaller, of a roundish shape, and has a single point of suppuration. Carbuncle is almost always solitary and has two or more points of suppuration, is flatter, may be several inches in diameter, and is not so sensitive as a furuncle.

Treatment.—The treatment is local and general.

The local treatment consists in endeavoring to allay the pain, reduce the inflammation, and promote the early expulsion of the central necrosed tissue. For the relief of the pain cold or warm applications for the diminution of the inflammatory process, and anodynes for their direct effect in reducing pain, may be employed. Whether cold or warm applications should be used depends on the special effect in individual cases. Whichever is most agreeable to the person should be employed, although, as a rule, cold in the early stages and warmth in the later stages are indicated. Cold reduces pain, relieves tension, and prevents, to an extent, the inflammatory process by interfering with the life movements of the living matter of the white blood corpuscles, emigration, and tissue change. If applied early and properly, boils can often be made to abort by its use. After suppuration is well established and when the furuncle feels doughy to the touch, cold should no longer be employed. Warm applications, as warm water or linseed poultices, should be used, as the moist heat favors suppuration, assists in softening the central mass and the tissue over the boil area, and thus, in several ways, aids in the early opening of the furuncle and the expulsion of its contents.

The objection to hot poultices is that they frequently cause

new boils to arise in the place of the existing one. After the boil has opened, the warm application should be continued two or three days longer or until all pain, hardness and swelling have disappeared.

Whether a boil should be opened by an early incision or not is still an undecided question. An early incision reduces tension and lessens obstruction to the expulsion of the core, but it lessens the suppurative process without stopping it, and this process more than incision hastens the expulsion of the dead tissue. The incision reduces the severity of the inflammation ; but unless the overlying tissue has been freely incised, it will resist the pressure from the core longer than if it had not been cut on account of this very lessened inflammatory condition. On theoretical as well as practical grounds then, it is generally better to use warm applications and wait until it opens spontaneously, or until the covering has become very thin.

Injecting two or three drops of a five per cent. solution of carbolic acid into the apex of a recent boil is said to frequently cause it to abort.

The general treatment consists in attention to the general health and in the administration of substances supposed to be specially useful in suppurative processes. If the person is in a sthenic condition, saline aperients should be given and the diet restricted. Acids, all indigestible foods, wine, beer, etc., should be avoided. If the urine is acid or high colored, depositing urates upon cooling, alkaline diuretics, as acetate or citrate of potash dissolved in large quantities of water, are useful. If the person is gouty, alkalies and colchicum are required. In weakly individuals, pure air, good food, stimulants, as wine or beer, tonics, exercise and frequent washing are required. For atonic dyspepsia, strychnia and the mineral acids are the best. In every case we should endeavor to find the special condition causing the furuncles. Arsenic and phosphorus have been found sometimes useful. Sulphite and hyposulphite of sodium, in doses of 15 to 30 grains every 2 or 3 hours, is recommended by Dr. Duhring. Sulphide of lime in small doses—one-sixth to one-tenth of a grain, frequently repeated is one of the best

remedies to prevent the formation or to hasten the suppurative process in furunculosis. It is especially useful in boils in children.

CARBUNCLE.

Carbuncle is commonly called anthrax both in our own and in foreign manuals of Dermatology. The term is a misnomer, leading only to confusion, and should be abandoned. Anthrax is a specific disease affecting animals and men, and due to a specific organism, the bacillus anthracis; the special skin lesion caused by it is known to us as malignant pustule, and to that disease alone the term anthrax should be applied.

Definition.—A circumscribed inflammation of the skin and of the subcutaneous connective tissue, often involving deeper parts. It terminates in gangrene of the affected area, and may prove fatal by septic infection.

Symptoms.—Carbuncle occurs by preference in those situations where the subcutaneous connective tissue and fat are abundant—on the buttocks, back, and neck—though it may appear on any other part of the body. A peculiarly malignant form is that which appears on the face.

After a variable period of general malaise, marked by slight fever, headache, anorexia, etc., the local trouble begins as a deep-seated, painful, circumscribed swelling, of a bright-red or livid color. Soon a small vesicle appears on its summit, filled with a bloody serum; it breaks, or is ruptured by the patient. The swelling increases in size, and usually reaches its full extent in two weeks, and forms a firm, brawny infiltration of a dusky red or violaceous hue. Itching, throbbing, and burning sensations, and a very considerable amount of pain are present. The ruptured vesicle discloses a number of small apertures going deep down into the subjacent tissues; a thin sanious pus oozes from them as through a sieve. Each opening marks a centre of suppuration—and from each eventually there comes away a "core"—a plug of necrotic tissue.

At the end of from ten days to three weeks, in accordance with its size, the tumor, still hard at its periphery, begins to

soften in the centre; the ridges of dusky skin between the numerous openings break down, and the whole mass forms an ashen, shiny slough, which comes away eventually either piecemeal or en masse, as suppuration proceeds.

The process may be very extensive, varying in size from that of a child's fist to that of an ordinary dinner plate; and whilst it is commencing to heal by suppuration and casting-off of dead tissue in the centre, it may be progressing at the periphery. Lesions may thus be formed which cover half the back, forming immense infiltrated plates with yellow or black necrotic masses in various places—and between them bands of dusky or violaceous skin. In the worst cases the whole integument of the part dies, and not only the connective tissue and fat, but the muscles and even the periosteum may be involved.

Ultimately a cavity of varying size is left, with uneven base and undermined edges; it heals very slowly, and leaves a large, deforming cicatrix, often pigmented.

In the meantime the constitutional symptoms vary much, in accordance with the extent of the inflammation and the general condition of the patient. In the earlier stages, fever, slight jaundice, nausea, fœtid diarrhœa are common; even delirium, etc., may occur. In moderate cases these symptoms soon subside, and are gone by the time that the process of separation of the slough begins. In bad cases the general symptoms are marked, and a sudden increase of the fever, together with severe chills, announce the occurrence of septic infection. When the carbuncle is very large, or when it invades the scalp—especially if the patients suffer also from diabetes, Bright's disease or gout—pyæmia in its worst forms is apt to occur. Pleurisy, peritonitis, spinal or cerebral meningitis may occur from the direct extension of the disease; if situated on the neck, the pressure of the carbuncle on the trachea and œsophagus may impede respiration and deglutition—and hasten a fatal issue. Occasionally the disease runs an indolent course, and the absence of pain is considered by Follin as of very bad omen. The whole duration of the process is usually two to six weeks.

Anatomy.—The inflammation begins simultaneously at a number of points in the inflamed part, probably starting from the sweat and sebaceous glands. Thence it extends downward into the subcutaneous connective tissue—and then horizontally —and, eventually, gangrene of the whole mass occurs. The fascia and muscles are often involved ; and even the periosteum and bone may be attacked. Serous membranes and deeper organs are invaded sometimes as the disease extends. The pus collects, and points in as many places as there are primary inflammatory centres ; hence the characteristic sieve-like appearance, and in each opening there is a plug composed of necrosed connective tissue and skin.

The carbuncle is cured by the occurrence of healthy inflammation in the surrounding uninvolved parts, and in the casting off of the entire dead tissue.

Etiology.—The causes of carbuncle are very much the same as those designated for furunculosis. In many cases they are absolutely unknown to us ; but in a general way improper food and bad hygiene, especially if conjoined to some local irritation of the skin, may be mentioned. It occurs more commonly in summer than in winter ; and is rarely seen in young persons, attacking those who are debilitated either by years or by excesses. It is more frequent in men than in women, and attacks with impartiality persons in all stations of life. It is prone to occur in gouty subjects and in those suffering from chronic Bright's disease. The interesting point in its etiology is in regard to its relationship to diabetes mellitus. It is well known that abscess, gangrene, furuncle, and carbuncle, are more common amongst diabetic patients than amongst others, and in a number of cases these troubles have led to the examination of the urine and the subsequent discovery of sugar. Acute attacks of saccharine diabetes sometimes occur in the course of carbuncle, and A. Wagner has reported several cases of the disease in which the urine had a specific gravity of 1029, and contained 5 per cent. of sugar. Prout has recorded a number of similar observations, but Follin did not succeed in demonstrating the presence of sugar in the urine even in the most ex-

tensive cases of carbuncular disease. No etiological relationship has as yet been established between the two affections; but the subject is an interesting one, and the urine should be examined in every case.

Diagnosis.—It is hardly likely that a carbuncle will be confounded with a simple boil or a phlegmon. The large extent of tissue affected, the livid tint, the multiple points of suppuration, all distinguish the graver disease. Its hardness, painfulness and circumscription distinguish it from erysipelas. Malignant pustule may be differentiated from carbuncle by the history, situation, absence of pain, and other signs of acute inflammation which distinguish the former disease, or by the presence of the characteristic organism in the fluids of the charbonous part.

Prognosis.—The prognosis varies with the age of the patient, the extent of the disease, and the presence of complications. It is bad if the patient is over fifty years of age, or if the carbuncle becomes very large—5 to 6 inches in diameter; or if the patient is a diabetic or albuminuric subject, or is otherwise broken down in health. There is danger of extension to more important structures in any case that affects the scalp. With all this, the disease is not so often fatal as is commonly supposed.

Auspitz does not believe that either the extent or the depth of the carbuncle has much to do with the prognosis, holding that small ones often cause fatal septic poisoning when they occur in marasmic subjects.

Treatment must be both local and general. As regards the former, a considerable change has occurred in the opinions of many surgeons as to the advisability of free crucial incisions through the inflamed tissues. That was the rule formerly prescribed in every case, but it has been claimed, especially by Paget and Agnew, that the extent of the necrotic process is not thereby affected, and that the loss of blood, which is often severe, is a positive injury to the patient. Nevertheless it does, especially in the earlier stages, greatly relieve the tension and the throbbing pain; and the opening up of the various inflammatory foci probably tends to prevent septic absorption. Kaposi even recommends the removal of the necrotic tissue by

the knife or curette, with a subsequent dressing of carbolized oil.

A very excellent method of treatment is the one so ably advocated by Dr. Physick. It consists of the insertion into the carbuncle, either at the orifices already formed, or into a special opening made with the knife, of small lumps of caustic potash, which are allowed to melt in situ. Pieces of the size of a pea may be used, in number varying according to the extent of the disease. Bryant lauds this as the most effective treatment, and claims that it markedly helps the separation of the slough and diminishes the danger of pyæmia. It causes no bleeding, and but little pain, and soon transforms the carbuncle into a healthy, granulating wound. Poultices, carbolic or opium lotions may be used in conjunction with this treatment.

Various other applications may be used. Hebra favored cold ice-bags. Blistering in a broad band around the part, or tincture of iodine has been used, but is not of special benefit. Better results have been obtained by the hypodermic injection of 5–10 % solutions of carbolic acid into various parts of the tumor, or by the free use of the Vienna paste.

Perhaps warm applications, as hot flax-seed poultices, frequently changed, do as much good as any method of treatment. They certainly relieve the throbbing pain better than any thing else, and they tend to promote the suppuration by which the necrosed mass is to be cast off. Whatever the previous treatment may have been, they should be used whenever the reactive inflammation sets in.

The carbuncle should be carefully dressed twice a day, and the removal of the necrotic tissue is to be recommended. Dry cupping is said by Leitner to hasten the separation of the slough and to afford much relief.

The resulting ulcer may be dressed in any of the ordinary ways—cold water, carbolized oil, balsam of Peru, etc.,—but perhaps best by a watery 1–10 carbolic acid dressing.

As far as the general treatment is concerned, it consists mainly in hygiene—generous diet and moderate alcoholic stimulation. In slight cases, when the patient's health and the

situation of the carbuncle permit it, exercise in the open air may be freely taken. Tinct. ferri chlor. in doses of twenty drops every two hours, or quinine, fifteen grains, three times a day are recommended by Duhring. Ringer has urged the use of the calcium sulphide in this as in the kindred affection of furunculosis. The mineral acids and the various digestive tonics should be given. Opium is often necessary to allay pain and to procure rest, especially in the early stages.

ECZEMA.

Syn.—Tetter; salt rheum; milk crust.

Definition.—An acute or chronic catarrhal inflammation of the skin characterized by diffuse redness and exudation, or by the formation of isolated or closely seated papules, vesicles or pustules, followed by weeping or scaling, and attended generally by much itching.

Symptoms.—Eczema is the skin disease for which the physician is consulted more frequently than any other, although acne and pediculi capitis are more frequent conditions. It is essentially a catarrhal inflammation of the skin, and the polymorphous character of the eruption depends upon the intensity and duration of the inflammation present, which intensity of inflammation depends upon the nature and amount of the noxious agent causing the tissue changes and the special degree of irritability of the skin affected. As shown by Hebra, all the symptoms and anatomical changes occurring in ordinary eczema can be produced at will upon the skin by the application of certain irritating agents, and especially croton oil. If a slight amount of croton oil be gently rubbed into the skin in different regions of the body, a superficial inflammatory condition will be produced, which will vary in degree according to the irritability of the different parts to which it has been applied. If the part is easily irritated, as is the case in the flexures or in the skin of infants and children, the resulting inflammation will be diffuse; that is, of an erythematous type. On the extensor surfaces the skin is less irritable and the inflammation will not be diffuse,

but be limited to the hair follicle region especially, and consequently consist of isolated papules, that is, be of a papular form of eruption.

Upon cessation of the irritation both these conditions of the skin subside, and the part returns to a normal condition after undergoing more or less desquamation. If more croton oil be rubbed in, or the rubbing be longer continued, or repeated the following day upon the same parts, there will be an increase in the intensity of the inflammation and in the amount of exudation and nutritive changes. The erythematous inflammation will extend deeper in the skin, the heat and swelling of the part will be increased, and the amount of exudation may be so great that it may remove the upper part of the epidermis and appear on the free surface, giving a dermatitis with a weeping surface—a moist form of dermatitis. If the part be not further irritated by additional applications of the oil, the inflammation will gradually subside, the exudation upon the free surface will dry to crusts and the epidermis beneath afterward desquamate, and finally regain its normal condition.

In the desquamating stage is represented a squamous dermatitis.

In the papular form an increase in the intensity of the inflammation will cause new papules to arise and the existing ones to become vesicles or vesico-papules, according to the amount of increase of serous exudation from the bloodvessels ; giving a superficial papular, papulo-vesicular or vesicular eruption. If the vesicles do not rupture and the irritation ceases, the exudation is absorbed and the eruption disappears by desquamation. If the amount of exudation, however, be sufficient to rupture the vesicle walls, the discharge reaches the free surface, and, as in the case of the erythematous form, dries to crusts or scabs. The part finally returns to a normal condition after passing through the scaling stage.

A more intense inflammation, or one of longer duration, which can be produced by repeating the croton oil application, or an inflammation occurring in scrofulous constitutions, will be associated with an increase in the number of formed elements pres-

ent in the exudation, and consequently the vesicles will become pustules ; or if the discharge is poured out upon the free surface, the exudation will be first serous, and later sero-purulent, the extent of the purulent character depending upon the constitution of the individual and the intensity and duration of the inflammatory process. When these changes take place the dermatitis is purulent in character ; it represents a pustular form of eruption. As in the previous form, the exudation dries to crusts, and later, the skin returns to a normal condition through a scaling stage.

In the above experiment, we observe a simple dermatitis, producing a polymorphous eruption, the polymorphous character depending upon the intensity of the inflammation and the special condition as regards irritability and pus-formative power of the tissues affected. From a single application of the oil to different parts of the body, all the forms may be produced at the same time, the irritability of the skin being different in different parts of the cutaneous surface. It is to be noted further, that the erythematous, papular, vesicular and pustular forms of the eruption represent an active inflammatory process, whilst the desquamative or scaling condition represents a healing stage. The pustular or vesicular form must commence as an erythematous or papular eruption, but the papules do not necessarily proceed to become vesicles or pustules.

Eczema, as ordinarily observed and produced, presents the same polymorphous character as the dermatitis from croton oil. The eruption may be of an erythematous, papular, vesicular, pustular, weeping or squamous character, or all may be present on a single individual at the same time. As in the other case, so here also, the erythematous or papular form is the primary form of the lesion, and may remain the only one, or the eruption may become vesicular, pustular or weeping in character. According to the form or appearance of the lesion present we may consequently have an erythematous, a papular, a pustular, a weeping or a squamous eczema. A pustular eczema, in which the pus collects upon the free surface, is often called an impetiginous eczema ; and a weeping eczema,

in which there is much discharge, an eczema madidans; or if the rete is exposed and is very red, an eczema rubrum. These differences in form depend upon the intensity of the inflammation, and this in its turn upon the character of the agent producing it and upon the degree of irritability of the tissues affected. In persons with tender skin, and especially in children and scrofulous individuals, the eruption will be frequently of a weeping or pustular or intense erythematous form, whilst in adults, especially on the extensor surfaces of the extremities, the papular or vesicular form is often observed. In old persons and in gouty and rheumatic subjects, the squamous form is very frequent.

Although, as already stated, all the forms of lesion may be present at the same time, and the disease in such cases be perhaps properly and sufficiently described by the term eczema, yet is it advisable to define more minutely the form of the lesions present, as they represent, as we have already observed, degrees of inflammation and consequently special manner of treatment.

All of the forms may be acute or chronic, and the longer the duration of the disease the greater and deeper are the nutrition changes in the skin.

We will first describe in general the symptoms and appearance of the different forms of eczema, and afterward the eruption, as it appears upon different parts of the body; as not only the form of the lesion but also the situation of the disease regulates the course of treatment to be employed.

Erythematous Eczema.—In this form the skin is red, swollen, somewhat elevated, hot and accompanied by more or less itching. If the inflammatory process is acute, the exudation will soon pass on to form papules or vesicles; but if subacute, the inflammatory symptoms soon begin to subside and the part returns to a normal condition after undergoing desquamation. This form is met with especially on the face, neck, genitals, palms of the hands and soles of the feet. When acute and seated on the face it resembles in many respects an erysipelas.

Papular Eczema.—In this form all the usual symptoms of a superficial inflammation are present, and upon the surface of the skin are to be seen a greater or less number of millet-sized papules, either isolated or closely seated, of a pale red color, acuminated, and the apex at first smooth, but afterward covered with a firm thin crust. They give rise to much itching. They either afterward become vesicles or remain as papules for a length of time. As a persistent papular eruption they are often observed on the extensor surfaces of the extremities, and form what was previously called a lichen simplex. In these cases the inflammation is seated especially around hair follicles. It is also frequent upon the scrotum and posterior surface of the body.

Localized patches of papular eczema are found on other situations, and from their arrangement in circular patches may bear a close resemblance to the eruption caused by the fungus of ringworm. In all cases of eczema, whether vesicular, pustular or squamous, a greater or less number of papules are generally to be found at the periphery of the patch, and in all cases of doubtful diagnosis between psoriasis, ringworm and eczema, they should be sought for. A papular eczema consisting of isolated papules situated around hair follicles is often very persistent, as local remedies are of little avail to remove the lesions and prevent new ones forming. When removed, the eruption is very liable to return.

Vesicular Eczema.—This form is always papular first, but the liquid may form so rapidly in the papules that the primary stage is not observed. It consists of millet to pin-head sized vesicles seated upon an inflamed and œdematous base. The vesicles are isolated, or closely seated, or may coalesce to form larger vesicles or blebs, and contain sticky contents which afterward become opaque from the presence of pus corpuscles. The vesicles burst very readily and discharge their contents upon the free surface. If the epidermis is thick, as upon the palms of the hands and soles of the feet, the vesicles may remain unruptured for a long time. In these situations they are not elevated above the general surface but appear as

a deep seated collection resembling a boiled sago grain in appearance. When the exudation is discharged upon the free surface it is of a sticky consistence and dries to thin light-yellowish crusts. The skin upon which the vesicles are situated is tender and the part itches very much. The greater the number of vesicles present, the more intense is the œdematous swelling of the part. The color of the affected area depends upon the intensity and stage of the inflammatory process. The extent of surface affected varies in different cases, and the margins of the eruption are always ill defined.

The eruption may continue vesicular in character for a long period ; or, by removal of the upper layer of the epidermis, the formation of vesicles will be prevented, and if the process continues very active, there will be a free discharge of exudation upon the general surface. When this occurs, the disease has received the name of eczema madidans.

Sooner or later the inflammatory process begins to subside, the amount of discharge diminishes, the crusts become thinner and looser, the skin appears red, desquamation takes place instead of exudation on the free surface, and the part finally returns to a normal condition.

This form is met with on all parts of the cutaneous surface, and during its active stage represents a more intense inflammation than the preceding forms.

Pustular Eczema.—This form is met with especially in young or scrofulous persons. It is very frequent upon the scalp and face of children. It arises from the erythematous, papular, or vesicular forms ; or when seated on the hairy scalp may be pustular almost from the commencement of the inflammation.

The exudation, which is abundant and is discharged upon the free surface, contains a large number of formed elements—pus-corpuscles, and dries to yellowish, greenish, or dark crusts. The skin beneath the crusts is red, and shows a surface discharging a sero-purulent material. This condition is called an *impetiginous eczema.* Formerly it was called impetigo, but this term is now used to denote a different condition.

In pustular eczema there is considerable infiltration of the

skin, and itching is a prominent symptom. The disease disappears in the same manner as the vesicular form.

Squamous Eczema.—This form usually represents a stage of the preceding forms, but it may occur primarily, in that scaling takes place directly upon a reddened skin, as is often observed upon the face from the effects of heat, or upon the hands from the action of chemical substances (Neumann.) I prefer to regard this condition as belonging to the erythematous form, and all scaling to be a secondary condition.

In this form the inflammation is less intense, the exudation less in amount, the crusts thinner, harder, more adherent, and the skin beneath red and scaling. This form may last a long time and then it is associated with more or less marked infiltration of the corium or sub-cutaneous tissue.

When from the eczematous process the corneous layer becomes removed by the exudation from beneath, leaving a dark red, naked rete Malpighii and presenting a surface discharging a thin liquid, the condition is sometimes called *eczema rubrum.*

On the lower extremities a long continued eczema in persons of middle age or advanced life, gives rise to a warty like condition of the skin, from hypertrophy of the papillæ consequent upon the chronic inflammation. These papillomatous formations are usually very closely seated and covered with very thin crusts or scales. This condition is called *eczema verrucosum.*

Whatever form of eczema is present it heals without ulceration, and with or without pigmentation following.

Eczema may be either acute or chronic, although it is generally chronic.

Acute eczema may appear on any part of the body, but it is most frequently met with on the face, hands, feet and genitals. It commences as one or more patches, and may increase in extent either by spreading at the periphery or by new spots arising in distant parts. It commences with symptoms of general disturbance, as chills, fever, restlessness, wakefulness, and general malaise. In twenty-four to forty-eight hours the skin becomes red, swollen, and covered with papules,

vesicles or pustules; the vesicles burst quickly, and a clear, gummy-like, sticky exudation is poured upon the surface, which afterward dries to crusts, beneath which a red, discharging surface is seen. Afterward the discharge gradually diminishes in quantity, the skin commences to desquamate, and later heals without scars. The eruption is always accompanied by burning and itching.

Acute general eczema is a rare disease, and arises from the union of a large number of localized patches. It is ushered in and accompanied by the symptoms described above, only that the general symptoms are more marked. It lasts two or three months, and usually leaves localized spots behind, especially on the flexures of the joints. These spots are often the starting points for relapses of the general eruption.

Chronic eczema results from exacerbations and remissions occuring on the same place, or from the continuous formation of new spots on other parts of the body, prolonging the duration of the disease. In chronic eczema all the forms of eruption may be present. If the disease has lasted for a long period on any spot, the skin becomes thickened, red and scaly, and if seated at the junction of a mucous and cutaneous surface, or over the joints, or on the palms of the hands, fissures are liable to form. In chronic eczema of the whole body, the skin appears red, scaly or moist, fissures form, the hair falls out, the nails degenerate, and there is much itching and a frequent slight shivering feeling. The duration of the disease is indefinite.

We will now proceed to describe the eruption as it occurs on different parts of the body.

Eczema of the Scalp.—In this situation the eczema is either acute or chronic. Acute eczema is most frequently of the impetiginous or squamous forms. It is most frequently met with in children. In this situation the exudation from the blood-vessels becomes mixed with fatty matter from the sebaceous glands, and the discharge in consequence has a disagreeable odor. The amount of secretion is usually considerable in quantity, and produces matting of the hairs. The exudation

dries to crusts, beneath which the skin is red, and discharges a sero-purulent liquid. Usually a considerable area of the scalp is affected. If the eruption is limited, it is generally due to local irritants, as lice. Eczema of the scalp frequently passes to the forehead, ears and cheeks.

Chronic eczema of the scalp is most frequently met with in children. It occurs most generally upon the vertex, occipital region and nape of the neck, and exists alone, or in combination with eczema of the face. The part is covered with crusts or scales, and the skin beneath is red, shining, with many white, fatty scabs; or there is some discharge. Acute outbreaks occasionally occur, or the inflammation may extend deeper around the hair follicles and produce appearances similar to sycosis. Eczema of the scalp, caused by lice, is usually of the impetiginous form, and appears as isolated patches from the size of a finger nail to one or two inches in diameter, covered with thick, dry, yellowish or dark colored, bad smelling crusts, beneath which the skin is red, smooth and shining, or moist, and discharging a sero-purulent liquid. These patches occur especially in the occipital region, and are generally associated with a papular or vesicular eczema of the nape of the neck. The glands of the neck are usually swollen, chronically and inflamed, but rarely suppurate.

Pityriasis of the scalp; that form of dandruff in which the greater part of the scalp is red, and covered with fine, branny scales, is a chronic squamous eczema. In this form the hairs fall out to a greater or less extent if the disease lasts a long period.

Eczema of the Face and Head.—Eczema of face and head may be acute or chronic. Acute general eczema of the face may be erythematous, vesicular or pustular in character, and usually commences with symptoms resembling an erysipelas. There is redness, swelling, burning, and œdema, especially of the forehead and eyelids, and this swelling soon spreads to the lips and ears, and may invade the hairy part of the head. The eyelids may be closed or immovable, and the ears stand out from the head on account of swelling of these parts from the inflammatory

exudation. Hearing is rendered difficult from swelling of the external orifice of the ear. The skin in a few hours from the commencement of the inflammation becomes covered with papules and vesicles, giving to the surface an uneven feel, so different from the smooth, glazed surface present in erysipelas. In a few hours more the vesicles increase in size and burst, discharging their contents upon the free surface. The amount and quantity of exudation differs in different cases, but it is usually serous in character and considerable in amount—an eczema madidans—and dries to corresponding crusts. There is especially much discharge from the skin of the ears. If the inflammation extends to the hairy part of the head, the secretion drying to crusts mats the hairs together. It may last only a few days, or may continue for weeks, or become chronic, when it assumes the squamous form, the skin becoming dry, thickened, and fissured, especially behind the ears.

Chronic eczema of the face is much more frequent than the acute form. It is either local or general, and often results from an extension of an eczema of the scalp to the forehead, cheeks or ears. It may be erythematous, vesicular, pustular or squamous in character. If vesicular or pustular, the exudation dries to yellow crusts, and the skin beneath is red and discharging. In the squamous form but few scales are present, and the skin may be red and slightly swollen, or almost normal in appearance, presenting only a slightly roughened aspect. This condition may last many years, the skin becoming somewhat thickened, and fissured in places. Occasional acute outbreaks assist in prolonging the duration of the disease. A good example of this condition is seen in chronic eczema of the cheeks in young or nursing children. An eczema of the cheeks, and sometimes forehead also, will last months or years without extending to the nose or the skin below the eyes.

The localized forms of eczema of the face require some additional consideration.

Eczema of the forehead is either acute or chronic and unless caused by some local irritant, as from pressure, and sweat from wearing a hat, it rarely exists alone, but is usually found in

association with eczema of neighboring parts, especially of the scalp.

Eczema of the eyebrows appears especially in the pustular or squamous form. When pustular, the part becomes covered with thick yellow crusts and the inflammation frequently extends around the hair follicles like in sycosis. In the chronic squamous form, the skin is thickened, red, and covered with scales. It is generally symmetrical.

Eczema of the eyelids is frequent. It is either acute, or chronic; and vesicular, or squamous in character. Pustules often form around the root of the hair. The lids become swollen, conjunctivitis is generally present, and fissures form at the angles of the lids. When it becomes chronic, crusts form between the hairs, and the eyelids stick together from drying up of the exudation.

Eczema of the nose is generally chronic, and occurs as eczema rubrum or eczema impetiginosum. It occurs most frequently on the alæ, and at the angle where this joins the lip. It is met with especially in scrofulous persons, associated with a nasal catarrh. In the mucous membrane it passes down around the hair follicles, producing a sycosiform eruption. The amount of crusting is considerable, so that the patients often are obliged to breathe entirely through the mouth, the nasal orifices being closed by dried crusts.

Fissures very frequently form at the angles of the alæ and near the septum, at the junction of the cutaneous and mucous surfaces. Beneath the crusts, the skin is red, and discharges a sero-pus. If this exudation becomes confined beneath the dried crusts and decomposes it may be absorbed by the lymphatics and produce an erysipelas. This absorption of pus from the nasal mucous membrane, is probably the most frequent cause of facial erysipelas.

Eczema of the lips usually arises from eczema of the face or nose. It appears in the impetiginous or squamous form, is usually symmetrical, and very obstinate to treatment. It is present either on the cutaneous or mucous surface, or both combined, and gives rise to deep, painful fissures, especially at the angles

of the mouth. A form which is frequently observed in women consists of fissures confined to the vermilion portion of the lips. They are very deep, bleed easily, and are covered with thin adherent crusts. Eczema of the lips is frequently observed in scrofulous persons in conjunction with eczema of the eyelids and nose.

Eczema of the ears arises either independently or in connection with eczema of the face or scalp. It is either acute or chronic. Acute eczema of the ears is usually of the vesicular form, and is characterized by great heat and swelling of the part, and by a large amount of exudation. There is much itching present, and hearing may be difficult from partial closure of the external auditory canal consequent on the swelling of the organ. The exudation on the ear dries to thick crusts, and within the auditory canal there is much scaling. The disease is usually symmetrical.

When chronic, the part becomes thickened and deep fissures form behind the ear where it joins the side of the head. Furuncles frequently form in the external auditory canal.

Eczema barbæ is a very frequent condition, and is often mistaken for sycosis. It is either acute or chronic, and the eruption is rarely limited to the part covered with hair. When acute, the part becomes red, swollen, tender, and there is considerable exudation and matting of the hairs from the dried crusts which form. Beneath the crusts the skin is moist and weeping. Pustules around the hair follicles, as in sycosis, are often present, and the term eczema sycosiforme is used to designate this condition. When chronic the skin is red, and scaling and itching are prominent symptoms.

Eczema of the head generally spreads to the surrounding parts, as the cheeks and neck.

Eczema of the chin and neck rarely occurs alone. Eczema of the neck may arise from irritation caused by a collar, in which case it remains limited, but its most frequent cause is from pediculi of the head, and then it is associated with eczema of the scalp. It is generally chronic in character and squamous in form.

Umbilical region.—Eczema of the umbilicus occurs either alone or in connection with eczema of the surrounding skin. It usually occurs as eczema rubrum, and is met with especially in fleshy persons and in those with a depressed navel. It is usually caused by irritation from collection and decomposition of sebaceous matter. The part is red and swollen, and there is frequently considerable exudation. It is very obstinate and difficult to cure.

Nipple and Mamma.—Eczema of this region is very frequent in nursing women after confinement. Eczema of the nipple and areola is also common in connection with scabies in women. The forms met with are e. rubrum and e. impetiginosum. Usually both nipples are affected. Longitudinal and horizontal fissures form and discharge a sero-purulent fluid which dries to crusts. The nipple soon becomes broader and flatter, and there is much pain and itching. Nursing increases the inflammation, and purulent mastitis often results.

Eczema of the genitals.—Eczema of the penis and scrotum may be acute or chronic. In the acute affection the penis is much swollen, especially in its lower part next the scrotum; the glans penis is unaffected, and the prepuce sometimes swollen and œdematous. The scrotum is much swollen, itches intensely, and the amount of discharge is very great. Owing to decomposition of the secretion from the sebaceous glands, the discharge has a very bad odor. The eruption is liable to extend to the mons veneris, thigh and perinæum. In females the labia are much swollen and tender, the amount of exudation is considerable, and the itching is severe. It is most frequent in stout individuals. It is liable to extend to the vaginal mucous membrane, causing a leucorrhœal discharge; or down the thigh; or up over the abdomen as far as the umbilicus.

Chronic eczema of the genitals in males is generally confined to the scrotum, and frequently to that portion only which is in contact with the thigh. After the eruption has lasted a long time the skin becomes thickened and scaly, and forms thick folds. It is very obstinate and causes great discomfort from the itching accompanying it.

Perinæum and anus.—Eczema often arises in this region on account of the amount of sweating present, and the irritation resulting from contact of the cutaneous surfaces, and from decomposing sebaceous secretion. The part may be only red and itching, or there may be considerable secretion. If it becomes chronic the part is infiltrated, fissures form, defæcation is painful, the rectal mucous membrane may become affected, prolapsus ani occur, and blood or slimy mucus proceed from the rectal mucous membrane. The disease is very obstinate to treatment.

Hands and feet.—Eczema of the hands and feet may be acute or chronic. When acute there is considerable swelling, with heat, pain and tension. The eruption is of the vesicular, bullous, or pustular form, and there may be only a few lesions, or, as is usually the case, they are very numerous and closely studded together. In children the eruption is frequently bullous in character, with much œdema. The bullæ are often purulent, and rupturing shows a red rete or bare corium. The fingers are swollen, thick and difficult to bend. One foot or one hand may be attacked, but the eruption is generally symmetrical, and the hands are more frequently affected than the feet. When the palms or soles are affected the vesicles are not elevated and remain intact a long time, as the thick epidermis prevents their escape to the free surface. Neighboring vesicles may run together and form bullæ, though this is most frequent in children. On the back of the hands, dorsum of the foot, and between the fingers and toes the eruption is papular or vesicular, and the vesicles, especially in children, frequently form larger or smaller bullæ. These vesicles or bullæ rupture, and then the appearances are those of eczema rubrum.

In chronic eczema of the hands, all forms of the eruption may be present. On the back of the hands and between the fingers there may be vesicles, with gummy exudation ; and on the palms the epidermis dry, and the skin infiltrated, inelastic and fissured, the fissures being situated over the flexures of the joints and in the natural markings of the palm. The eruption in the palm may be general or limited in extent, and the margins

abrupt or gradually shading off into the normal skin. It sometimes resembles very much a squamous syphilide of the palm, but differs from the latter in that it shows no tendency to heal at the center, and the sharply-limited infiltrated margin of syphilis is wanting.

Eczema of the feet rarely gives the dry fissured form observed on the palms of the hands, as the perspiration and retained sweat softens the epidermis. The latter is thickened, sodden-like, and separates in large flakes. Between the toes especially, but also on the rest of the foot, there is much itching and often pain.

Eczema of the nails.—In general eczema, and in eczema of the hands, especially if the dorsal surface of the fingers is affected, there is disease of the nails. Several, or all the nails may be affected, although the latter is unusual in eczema of the hands. The nails lose their smooth and shining aspect and become dry, roughened, furrowed, honey-combed like, and brittle. The furrows are longitudinal or transverse, and the affection cannot be diagnosed from the condition present in psoriasis or lichen ruber by examination of the nails alone. In severe cases the nails exfoliate but are replaced by healthy nails if the eczema is removed.

Eczema of the flexures of the joints is a frequent affection, and is usually symmetrical. It is either acute or chronic. When acute, it commences as an erythema intertrigo, and later as an eczema intertrigo. If chronic, the skin becomes thickened, reddened, scaly, fissured, painful, and movement is interfered with. The chronic form is very obstinate. It is more frequent in the popliteal spaces than in the fronts of the elbows.

Eczema intertrigo, which is closely related to eczema of the flexures, the eruption commences as a hyperæmia and soon passes on to an eczematous condition. It is met with especially in children and in stout women, and occurs whenever two cutaneous surfaces come in contact, as in the neck, axilla, beneath the mammæ, groin, genital and anal region. In the axilla, where it is usually caused by profuse sweating, the skin is red, and moist, and consecutive swelling and suppuration of the

axillary glands is a frequent occurrence. In children intertrigo may be accompanied by intense phlegmonous inflammation and œdema of the part, and in badly-nourished subjects, loss of substance, and even gangrene.

Eczema crurale.—Eczema of the legs is often symmetrical and is papular, pustular or vesicular in form. When acute, there is considerable exudation which dries to yellow or brown crusts.

Chronic eczema of the legs is not so often symmetrical and is usually found in elderly persons with a varicose condition of the veins. It commences as an erythematous or vesicular eczema, but soon appears as an eczema rubrum or squamosum. In e. rubrum the skin appears of a deep red color with pointed red spots, and is more or less covered with yellowish or brownish crusts. In the squamous form the appearances are often very much like those in psoriasis, especially if the patch is limited in extent. The skin is thickened and covered by a greater or less quantity of whitish crusts or scales. There may be an entire absence of vesicles either in the patch or at its periphery. This form is seen especially in rheumatic or gouty subjects.

Long continued eczema of the leg causes thickening of the corium, a pachydermatous condition and a warty-like appearance from hypertrophy of the papillæ—*eczema verrucosum.*

Anatomy.—Eczema may be regarded as a simple catarrhal inflammation of the skin, and, as in catarrhal conditions of the mucous membrane, the changes in the part will depend upon the intensity and duration of the inflammation.

In the erythematous form all the vessels of the papillary layer are affected. The bloodvessels are dilated, there is exudation and congestion and increased activity of the epidermis, as shown by the scaling. In the papular form the changes are primarily confined to the follicles of the skin, and especially to the hair follicles. The bloodvessels are dilated, there is serous exudation, with some emigration and secondary changes in the corium and epidermis. The vascular changes need not be described, as they are the same as occur in all inflammations. The exudation causes swelling of the papillæ and upper part of the corium, and a more or less indistinctness of the ground sub-

stance of these parts. A portion of the exudation passes into the rete, between the cells, pushing them apart and raising the corneous layer and part of the rete, forming the papule. In the vesicular form the changes are simply an exaggeration of those occurring in the papular stage. There is more exudation and emigration and consequently more œdematous condition of the papillæ and corium, and probably active formative changes in the connective tissue corpuscles. There is more

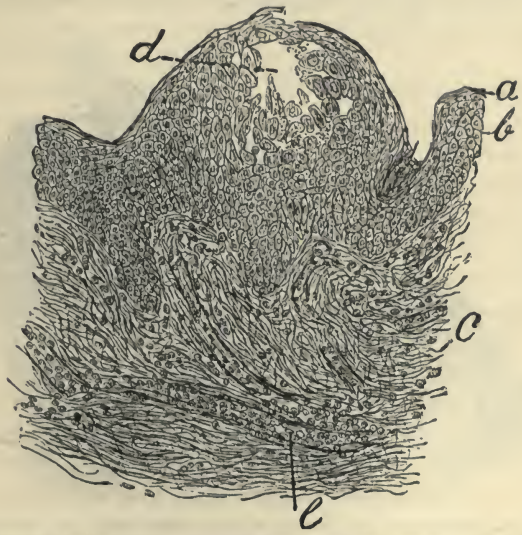


FIG. 39.—Vertical section of a recent vesicle of eczema. *a*, corneous layer; *b*, rete; *c*, corium; *d*, vesicle; *e*, dilated blood vessels.

exudation into the rete and the cells are pushed further apart, and some are completely separated, and lie loose in the vesicle, which forms in the upper part of the rete or just beneath the corneous layer. The cells of the rete do not take any active process in the changes which lead to the formation of the vesicle, and in eczema there is no reason to suppose a primary nutritive change in the rete cells previous to the vascular changes. No one has shown that the changes in the rete in an erythematous eczema, which later assumes the papular or vesi-

cular form, are different from those occurring, say in scarlatina. If there is sufficient exudation to form a vesicle, the rete cells swell up from imbibition of the serous liquid, and many of them, especially in the interpapillary processes, undergo a dropsical degeneration and finally unite their contents with the serous fluid, giving rise to the gummy liquid characteristic of a catarrhal inflammation of a cutaneous or mucous surface. The vesicle itself consists at first of a clear liquid and a few isolated or distorted rete cells, but later pus corpuscles are present, and

FIG. 40.—Section of the skin in eczema verrucosum: *a*, corneous layer; *b*, rete; *c*, hypertrophied papillæ; *d*, corium; *e*, hypertrophied corneous layer.

continue to increase in number the longer the vesicle exists. The origin of these corpuscles is at first exclusively from the bloodvessels, but later some at least probably come from the connective tissue corpuscles and from the corpuscles of the lower rete cells, the result of an irritation from the bloodvessel exudation. In Fig. 39 are shown the changes occurring in a commencing vesicle.

In pustular eczema the exudation and tissue changes continue and there is an increase in the cell emigration and local multiplication from the emigrated and also from the connective

tissue and rete corpuscles, hence more round cells are present in the corium, rete and vesicle. In chronic eczema the process extends deeper in the corium and even to the subcutaneous tissue, and the part becomes thickened from the infiltration and occasional new connective tissue formation. The exudation and round cell collection occurs especially along the course of the bloodvessels. The lymph vessels become enlarged, and in long continued inflammation the hair follicles, sweat and sebaceous glands may be destroyed. The papillæ are enlarged and may be much hypertrophied, as occurs in the verrucous form, as shown in Fig. 40.

In this form the condition should no longer be considered as an eczematous condition, but one of hypertrophy, as shown by the active new formation of bloodvessels and connective tissue. The rete is not much changed, but their cells do not undergo the usual horny transformation process, but assume a pearly appearance and are cast off in lamellæ instead of in scales.

In ordinary chronic eczema rubrum the corium is thickened from exudation and round cell collection as already described. The papillæ are enlarged from the same causes. The boundary between the corium and rete is often absent, as the round cell collection and the inflammatory changes on the one hand and the changes in the rete on the other destroy their characteristic appearance. In the rete the lowest rows cells are separated from each other and are mixed with round cells, either from the corium and bloodvessels, or from those, and from rete cells which have returned to an embryonic condition. The corneous layer is partly or completely absent, and, if present, its cells are abnormal in character, as shown by the number which still retain their nucleus. The surface of this layer is also very irregular, as shown in Fig. 41.

In chronic eczema rubrum we have the changes in the corium and epidermis; the corium, including the papillæ, being in an inflammatory condition, with the changed bloodvessels, exudation, cell emigration and embryonic cell formation from the connective tissue of the corium. The rete is changed, in that the lowest rows of cells are separated from

each other, and many of them are producing embryonic bodies. The upper part of the rete is more normal in appearance. The upper part of the corneous layer is absent, and the remainder is uneven and shows an interference with the horny transformation change.

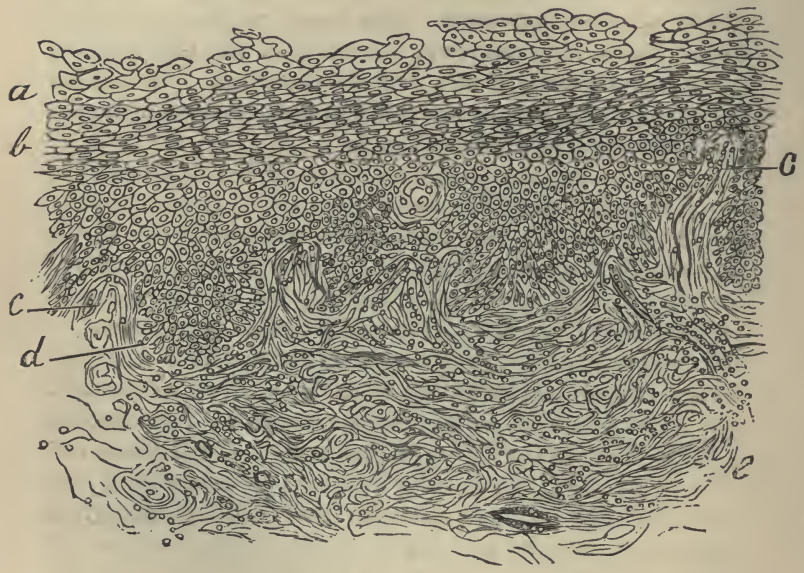


FIG. 41.—Section from a case of chronic eczema rubrum of the leg: *a*, corneous layer; *b*, stratum lucidum; *c*, papillæ; *d*, interpapillary rete; *e*, deep part of corium.

In many cases of chronic eczema the changes in the epidermis here described do not occur, the part appearing to be in an almost normal condition, except the corneous layer.

In chronic eczema squamosum the corium and papillæ show dilated bloodvessels and round cell collection, with changed connective tissue corpuscles and more or less disappearance of the ground substance. The epidermis appears normal, except that there is active cell desquamation from the corneous layer, the result probably of the increased nutrition consequent on

the chronic hyperæmic condition of the corium. In fig. 42 is represented a horizontal section of the skin from the palm of the hand in a case of squamous eczema with but slight infiltration. The disease disappeared in two or three weeks later. Four papillæ are shown containing dilated bloodvessels and embryonic cell collection. The rete cells are shown to be normal in appearance and to be connected to each other by filaments.

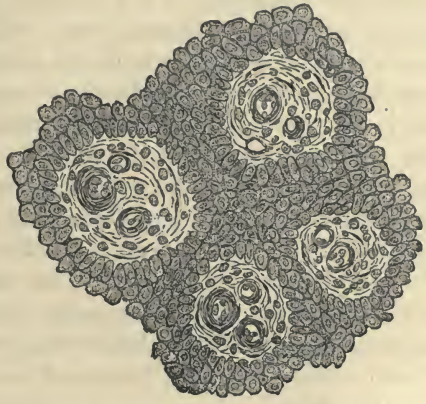


FIG. 42.—Horizontal section of the skin in chronic squamous eczema.

Etiology.—The cause of an eczematous inflammation may depend upon an external irritation acting directly upon the skin, or an internal irritation depending upon certain conditions of the system. External local causes are either mechanical or chemical. The rubbing of two surfaces against each other, especially if moist from sweat or other secretions; scratching, parasites, etc., are examples of the disease from direct mechanical irritation. Croton oil, strong potash preparations, blue ointment, sulphur, mineral acids, arnica, turpentine, etc., are examples of chemical causes. Venous hyperæmia leading to transudation of serum in the tissues, and later to dermatitis, as observed on the leg and around the anus from varicose veins, is a frequent cause of eczema of these regions.

Among the many causes acting from within are dyspepsia,

diabetes, albuminuria, deficient excretion of solids by the kidneys, and constipation. The changed condition of the blood produced by these abnormal conditions either causes the blood to act as a direct irritant as it passes through the capillaries of the skin, or so changes the constitution of the tissues that they are more liable to react to external irritants. We do not think that at any time such conditions as scrofula, anæmia chlorosis, etc., produce an eczema, except in an indirect manner by increasing the irritability of the elements of the skin, or lessening their power to withstand direct irritation either from within or without. As lesions to be the result of constitutional causes must be shown to be the direct cause of a general condition in the system ; that is, of a general disease, as for instance is the case in affections of the joints in rheumatism ; and as we know of no disease of the general system in which it has been shown that it can directly produce an eczema, we are obliged to hold the view that eczema is an affection of local origin. Certain conditions of the system, as quoted above, predispose to the disease, and these same conditions will prolong the duration of an eczema, however produced, unless they be removed. This is especially the case with acid dyspepsia, rheumatism and gout.

As regards the eczema of children, it is found in both healthy and sick children. It is frequently observed in those who have an acid dyspepsia or other digestive troubles, but it is also met with in those who are robust. In the latter their protoplasm is very active, and reacts upon slight irritation, and in many of these cases the eruption is seated on the cheeks, where the capillaries are active and unusually near the free surface, as shown by the red cheeks of these children. Dentition is no more a cause of eczema than it is of the score of other troubles which are innocently laid to its charge.

Diagnosis.—Eczema is a polymorphous eruption, and in endeavoring to arrive at a conclusion as to whether a definite eruption is eczematous or not, we must remember that it may appear singly or combined in any of its forms. It has no definite course ; it may appear upon any part of the body ; it may

be dry or moist ; the area affected may be limited or very extensive, and finally it may be complicated by other conditions. The diagnosis can only be made with certainty when the pathological character of the eruption is understood ; when one understands the changes which must occur before a given eruption can constitute a catarrhal inflammation of the skin. The signs of inflammation must always be present, nutritive changes must occur in the skin, and there must be signs of exudation. The history of the case, whether a similar or any eruption has previously occurred, and the appearance and course of that eruption, the manner in which it commenced, whether vesicles or discharge was present, etc., are all to be noted in cases difficult to diagnose.

The eruption may resemble somewhat lichen ruber, lichen planus, herpes, a small papular or vesicular syphilide, erythematous lupus, psoriasis, seborrhœa, syphilis of the palms, pityriasis rubra, erysipelas, scabies, sycosis, tinea tonsurans, pemphigus foliaceus, or urticaria.

Lichen ruber commences as papules, and remains as such during their whole existence. There are never any vesicles present. They form slowly, and there are firmly adherent scales on their apex.

Lichen planus sometimes closely resembles a follicular eczema of the legs or forearms, the papules, however, never become vesicles, their course is slow, they are often umbilicated, are violaceous in color, have a tendency to group and the eruption is symmetrical. In eczema some of the papules become vesicles, the lesions run an acute course, they are generally acuminated, of a bright red color, are irregularly distributed, and the eruption is generally unsymmetrical.

In Herpes the vesicles are grouped, the individual vesicles of a group are of the same age and stage of development, and they tend to dry up without rupturing. In eczema the vesicles of a patch are of all ages and they tend to rupture.

In the *small papular syphilide* the papules are hard, the redness does not disappear upon pressure, they show some tendency to grouping, the eruption is more or less general over

the whole body and larger papules, or other signs of syphilis are present.

A flat papule at the angle of the mouth resembles very much a fissured eczema of this region, but the history of the case, the presence of other lesions on the body or mucous membrane of the mouth, and the single deep horizontal fissure are sufficient for the diagnosis.

A pustular syphilide of the head resembles an impetiginous eczema in the crusting and general distribution, but removal of the crusts shows in syphilis a deep ulceration with a dirty base, whilst in eczema ulceration never occurs.

Syphilis of the palms is very difficult to diagnose from a squamous eczema. In syphilis, both hands and feet are usually affected, and there are syphilitic lesions on the mucous membrane of the mouth or general cutaneous surface. In syphilis the infiltration is firmer, it sits deeper, extends a short distance beyond the scaling area, itches little, if any, the redness does not disappear upon pressure, and the patch spreads by extension at the periphery.

In eczema vesicles are to be seen, the patches of eruption are generally larger than in syphilis, the disease is not so frequently symmetrical, the central part of a patch does not clear up as in syphilis, the margins are irregular, and there is an absence of the dark-brown, deeply-seated, sharply-limited infiltration of syphilis.

Erythematous lupus.—This disease resembles somewhat a limited patch of squamous eczema, but the course of the disease is very slow, requiring months or years to become half an inch in diameter, there are no vesicles present at any time, the scales are few and firmly attached, and are provided on their under surface with plugs of sebaceous matter which dip into the follicle. The eruption is well-defined, spreads very slowly, does not itch, and cicatrical tissue is always formed, commencing in the central part of the lesion. In eczema the eruption spreads more rapidly, there is often a history of weeping or papule formation, the amount of scaling is greater, the scales are loose and not provided with sebaceous plugs on

their under surface, the margin of the patch is rarely abrupt, and there is no formation of cicatricial tissue.

Psoriasis.—In psoriasis there are scales and not crusts, the scales are plentiful, and not thrown off in lamellæ, and are pearly white in appearance. The eruption is sharply limited, never commences as vesicles, there is never any history of moisture, the patches spread at the periphery whilst the center clears up, giving a ring-form to the eruption, it is met with especially on the exterior surfaces of the knees and elbows, it itches but little, and removal of the scales and scraping the skin beneath, causes oozing of blood. In eczema the scales or crusts are not pearly white, they are not thrown off as lamellæ, the eruption is rarely sharply limited, there is usually a history of moisture, the patches spread by the formation of new papules or vesicles, the center of a patch shows no tendency to heal, but on the contrary is usually the most infiltrated, itching is generally present, scratching of the surface after removal of the scales does not show isolated oozing points, and the flexures are more frequently attacked than the extensor surfaces. Psoriasis of the palms is a very rare affection and is never met with on these parts alone.

In *pityriasis rubra* the scales are large and thin, like paper; there are no papules, no moisture or special infiltration of the the skin, the scales are rapidly reproduced, itching is slight and the eruption tends to spread over the whole body. In eczema there is usually papules and some moisture if the eruption is at all extensive, and if it has lasted a short time there is more or less infiltration of the skin. The scales are not so thin, or so numerous, and itching is much more severe than in pityriasis rubra.

In *seborrhœa* the skin is normal or pale red in color, the eruption extends over the whole head as a rule, the glands are not swollen, there is no weeping, and the scales or crusts are fatty or oily in character. In eczema the eruption is limited in extent, the skin is red, inflamed, the glands are often swollen, weeping is frequently present, and the crusts or scales consist of epithelial cells or dried exudation.

In *erysipelas* there is more redness, swelling and fever, the disease commences in one spot and spreads rapidly, the skin has a shining, tense appearance and is smooth or studded with deep vesicles or with bullæ. The disease is acute in its course, and is ushered in with chills and other symptoms of general disturbance. In eczema there is less fever, heat, redness and swelling of the skin, the eruption does not commence at a point and spread rapidly at the periphery, the skin has not a tense, shining appearance and the margin is not so sharply limited.

In *scabies* the situation of the eruption, the history of the case as regards contagion, the presence of characteristic furrows, and the intense itching as compared to the number of vesicles present, are sufficient for the diagnosis. In children the furrow may not be found, but the situation of the eruption and the bullous or pustular character of the lesions, its symmetrical occurrence and presence on the forearms as well as on the hands, are characteristic.

In *sycosis* the eruption is confined to the hairy part of the face, the crusts are smaller, and a hair is present in the center of every pustule. In eczema the eruption generally extends to the neighboring parts and does not remain limited to the hairy regions, there is considerable exudation and crust formation, the skin is infiltrated, and the pus does not come from the peri-follicular region.

Tinea tonsurans is sometimes very difficult to diagnose from an eczema. In ringworn of the scalp the patches are circular in form, the scales are grayish white, the hairs are dry and broken, and the eruption spreads by peripheral growth. In eczema there is more discharge, the patches are not so circular in form nor do they increase in size by peripheral growth, and the hairs are unaffected.

In ringworm of the body it is sometimes impossible to diagnose the eruption without the aid of a microscope. If the ring-form is present, or a history of contagion, then there is no difficulty.

In eczema marginatum the sharp limitation, its growth be-

yond the place of scrotal contact, the greatest intensity of inflammation at the peirpheral part, whilst the center has partly or almost completely healed, are generally sufficient for the diagnosis. When in doubt, the microscope should be used.

In pemphigus foliaceous, the eruption commences as bullæ, the scales are large and flat, the skin is not infiltrated and the eruption tends to become general over the whole body.

Lichen urticatus resembles somewhat a papular eczema in children, but the history of the case and the presence of wheals will prevent a mistake.

Prognosis.—The prognosis of eczema is so far favorable in that it can almost invariably be cured, but the length of time required for its removal differs very much in different cases. Some forms run an acute course whilst others are very obstinate. Acute vesicular eczema does not usually last as long as the papular form. A follicular eczema of the leg is always chronic in its course and difficult to completely remove. Eczema of the scrotum is generally very obstinate, as is also an eczema depending on a varicose condition of the veins. Chronic eczema of the hands in persons who are obliged to put their hands occasionally in water is very troublesome to remove. In general eczema of old persons, associated with intense itching, the prognosis is not very favorable. The cause of the eruption, the general condition of the patient, and the history as regards previous attacks of the disease should all influence our prognosis as to the chances of rapid recovery and liability to relapse.

Treatment.—The treatment of eczema is both local and internal. The internal treatment consists in the administration of remedies for the removal of any abnormal condition of the general system or disease of an internal organ. As already mentioned when discussing the etiology of eczema, very many of the cases of this disease are either indirectly caused or are prolonged in their existence by abnormal conditions of the general system, or of other organs, and consequently internal treatment is required in all these cases to aid the local treatment and to prevent a relapse of the disease. We will not

endeavor to give the treatment for these abnormal conditions as that belongs to the subject of internal medicine, but will briefly note the indications in general. Purgatives and aperients are indicated in cases of constipation of the bowels in robust and fleshy persons, who are accustomed to excess in eating or drinking, but they should not be given if the individual is anæmic. In these latter cases a combination of iron and aloes, with or without quinine or strychnine, is indicated. Saline laxatives are useful in the acute inflammatory forms of eczema, and may be employed in the form of rochelle salts, sulphate of magnesia, Hunyadi jànos water, etc.

Diuretics are indicated in functional derangement of the kidneys, and in all cases of acute inflammatory eczema, to relieve the skin. Alkaline diuretics, as the acetate or citrate of potash, should be used. A good combination is that of acetate of potash and sweet spirits of nitre combined with syrup of orange and an aromatic water. In gouty or rheumatic states of the system these alkalies can be given in combination with the wine of colchicum. They should be administered in large quantities of water to get their proper diuretic effects. Alkalies should also be given for their antacid effects in cases of excessive acidity of the system consequent on an acid dyspepsia. They are useful in cases of acid stomach from improper food or from the inordinate use of stimulants. The liquor potass. twenty drops three times a day, bicarbonate of soda or the carbonate of ammonia, ten to thirty grains, three times a day, are the best preparations to counteract this acidity. If the bowels are at the time constipated, the ordinary rhubarb and soda mixture answers the object very well. Cod-liver oil should be given in all scrofulous or strumous cases, and is frequently sufficient of itself to remove eczema in these subjects. Iron, etc., should be given in cases of anæmia. The diet should always be regulated according to the individual case. Plethoric persons should have a light, easily-digested diet, and meat should be taken only in very small quantities. Wines or stimulants, tea or coffee should not be used. In anæmic, debilitated persons a liberal diet with stimulants are generally necessary.

Arsenic may be given in all cases of chronic eczema, but it is contraindicated in acute cases. It is most useful in the chronic squamous form. Fowler's solution is a useful form, and should be given after meals, commencing with small doses and gradually increasing the quantity every three or four days until some physiological effect is produced. This full dose is continued until the eruption disappears, and then it is continued a short time longer in smaller doses. In anaemic cases it should be combined with some preparation of iron. Children can take comparatively large doses. It is one of our most useful remedies for eczema, and when given in the proper dose and for the chronic forms of the disease, it rarely fails to act beneficially. Unfortunately some persons cannot take it on account of the gastric disturbance or irritation of the conjunctiva which it causes.

Local Treatment.—The local treatment is regulated by the pathological condition present, whether the eruption is acute or chronic, erythematous, papular, vesicular, pustular or squamous, and the extent of area affected. Our success in the local treatment of eczema will depend upon our ability to appreciate the nature of the changes occurring in the skin, the condition of the tissues in the different stages of inflammation, and the action of the remedies to be employed. The treatment for acute and chronic eczema is entirely different; in the former soothing remedies are to be employed, and in the latter more or less irritating ones.

ACUTE ECZEMA.

In the acute stage of eczema all irritating applications are to be avoided and soothing ones only employed. The inflamed skin is to be protected from irritation from the air, heat, the rubbing of the clothes, etc., and the itching and burning of the part relieved. To protect the skin from the air and reduce the irritation, itching, burning and inflammation, the part should be dusted with protecting powders as lycopodium, talcum venetum, starch, etc. If there is much itching, camphor (2 per cent.) can be added. For general use starch is as bene-

ficial as any of the powders, and is preferable to the toilet powders of commerce. It can be medicated according to the method suggested by Dr. Faithful of Australia. The fluid extract of the substance desired to be added is dissolved in alcohol, ether or chlorform, and the tincture or solution then thoroughly mixed with the starch, and afterward the alcohol, ether or chloroform allowed to evaporate. Any substance soluble in alcohol, ether or chloroform, may be used according to the indications to be fulfilled. Further experience in the use of these medicated powders will undoubtedly enable us to make such combinations as will allay the troublesome itching and burning in this disease. In intertrigo the parts should be powdered with starch mixed with boracic acid (1 per cent.), or salicylic acid (1 per cent.), and absorbent cotton (borated) placed between the opposing surfaces. In papular eczema the intense itching can be treated by dusting with an anodyne medicated powder, or the part may be washed with alcohol and carbolic or salicylic acid (1 per cent.), or simply with cologne water or a weak solution of vinegar.

If the eczema is vesicular in form or weeping the same applications can be used as for the acute erythematous and papular forms. If the inflammation is intense and there is much pain, a lead and opium wash, or cold water should be applied by means of linen cloths kept constantly moist with the liquid. If a very large surface is affected, alkaline baths may be employed, or if the area affected is limited, an alkaline lotion, bicarbonate of soda or borax, one-half drachm to a pint of water may be used instead of the lead and opium wash. McCall Anderson recommends a solution of dilute hydrocyanic acid, ʒ ii. to aquæ Oj. as a lotion to relieve the itching. These protecting powders and soothing and antiphlogistic applications are all that can be used locally during the inflammatory stage when there is much heat, redness, swelling and itching, or pain. Internally, a low diet and alkaline mineral waters, and perhaps saline aperients should be ordered.

When the inflammation has somewhat abated in intensity, use may be made of ointments to protect the surface and reduce

the irritation. The ointment must be non-irritating, homogeneous, and not liable to become rancid. The benzoated oxide of zinc fulfills these indications perhaps better than any other ointment. It may be necessary in some cases to reduce the strength of the oxide of zinc, but usually it can be ordered of the full strength. It must not be used as long as the inflammation is very acute, if otherwise the irritation of the skin would be still further increased.

McCall Anderson recommends the following ointment as the most soothing, with which he is acquainted: ℞. Bismuthi oxidi, ʒ i.; acidi oleici, ʒ viii.; ceræ albæ, ʒ iii.; vaseline, ʒ ix.; olei rosæ; M. v. Mix.

In Vienna they use the diachylon salve of Hebra, which at present is generally made by mixing together equal parts of vaseline and simple lead plaster. In my experience it is much more irritating than the zinc salve, and if applied too early sometimes aggravates the eruption.

If crusts have formed from drying up of the exudation, these, if of any amount, must be removed before applying the salve. As good a plan as any is to thoroughly saturate them with oil, and in a few hours wash the part with warm water; or a poultice may be applied instead of the oil.

Ointments may be either rubbed into the skin or applied on strips of cloth and bound upon the part. Whenever practicable the latter method should be followed, as the results are more satisfactory when the ointment is applied in this manner.

Where large surfaces are affected I have lately used with satisfactory results, a preparation of oxide of zinc mixed with mucilaginous acacia and glycerine, as recommended by Unna, of Hamburg. The advantages of the preparation are its cheapness, the ease of application, and the completeness of protection to the inflamed surface. It is prepared as follows: ℞. Zinci ox., ʒ i.; Muc. gum arab.; Glycerini āā, ʒ ii. It can be applied with a brush two or three times a day. If there is much itching salicylic acid, or carbolic acid (1%) may be added. In some few cases the glycerine has irritated the skin too much.

As the eruption approaches the chronic stage, the diachylon ointment of Hebra can be used, or the zinc ointment with or without bismuth, or the mucilage paste of Unna. Ointments when used should always be renewed twice daily, and should be spread so thick upon the cloths that they will not become dry before the time for renewal.

During the acute stage the parts should not be washed by soap and water, as that operation irritates the skin and intensifies the inflammation.

In the squamous stage of an acute eczema, continued use is to be made of the previously mentioned ointments, and if the scaling does not cease in due time, recourse must be had to a tar preparation.

CHRONIC ECZEMA.

In chronic eczema the indications for treatment are first the removal of crusts, or epidermic masses, and secondly, to treat the inflammation and infiltration. For the removal of the crusts oil can be employed in the manner already described. It is especially indicated in eczema of hairy parts. On non-hairy parts fresh lard, or a simple non-irritating ointment spread upon cloths may be used. Water in the form of baths, douches and with cloths has been recommended, but is not so reliable, as the water may irritate the skin. If the scales are not removed by these applications, recourse must be had to green soap. This is to be applied to the part and then rubbed with a flannel dipped in warm water until a lather forms, when it is washed off with warm water and an ointment applied. On the hairy part of the head the spiritus saponis kalinus of Hebra (saponis viridis, ʒ i., spirit. rectif. ʒ ii.,) may be used instead of the green soap. The thickened epidermis masses present in eczema squamosum of the palms can be removed by green soap, caustic potash, hydrochloric acid, or an ointment of salicylic acid. The last preparation is preferable and can be used spread upon cloths or rubbed in hourly.

Having removed the crusts or scales the inflammation and infiltration are to be treated. Use should still be made of dia-

chylon salve, zinc salve, etc., as for the previous stage, and the applications made twice daily. If they are not sufficient to remove the eruption, recourse must be had to stronger remedies. If the patch is small, and the infiltration is not great, the daily washing with green soap and subsequent application of diachylon salve, etc., is generally sufficient. Instead of green soap, liquor potassæ may be brushed on the part and then washed off with tepid water. If stronger applications are necessary, use may be made of potassa fusa in the strength of two to thirty grains to the ounce of water, the strength depending upon the indications of the case. The strong solution should be quickly washed off, and should not be applied oftener than once a day. Hebra used, occasionally, a solution of the strength of one part of the potash to two of water, twice a week, as long as the infiltration lasted.

Usually, the green soap application is sufficient, and it should be continued, in conjunction with an ointment, until the skin is smooth and the infiltration has disappeared. The soap removes the upper layer of epidermis, destroys the vesicles beneath, and relieves the capillary vessels. If the soap is spread upon flannel and applied over night, the effect is much greater than from washing, and can be so used in obstinate cases. If, finally, some slight thickening remains, use must be made of tar preparations.

Oil of cade is the tar preparation most frequently employed, but oleum rusci is pleasanter to the smell. Tar may be used either pure or in the form of an ointment or solution. It should never be employed in cases of acute eczema. As an ointment it is used in the strength of one part of tar to one to twenty parts of lard. On hairy parts it is applied as a liquid by mixing equal parts of tar and alcohol. The pure tar and the ointment are to be rubbed into the skin with the hand, and the tincture is applied with a brush; after the application the part is to be powdered with starch. If the skin becomes somewhat irritated from the air, tar and ointment may be subsequently applied. "The liquor picis alkalinus" of Bulkley, (picis liquidæ, ʒ ii.; potassæ, ʒ i.; aquæ destillatæ, ʒ v.) is a useful

preparation, as it can be combined with water to form a lotion of any desired strength. Usually, it may be employed in the strength of one to four drachms to a pint of water.

Tar should be applied once or twice a day, and its use continued until the hyperæmia and scaling have entirely disappeared.

The only objection to tar is, that it is a treacherous remedy, and will sometimes irritate the skin and produce an acute eczema when it seemed strongly to be indicated. Last winter I applied pure tar to a case of chronic squamous ecezma of the wrists, and in twenty-four hours an acute dermatitis, extending to the elbows, resulted.

Blistering with cantharides is sometimes useful in obstinate cases of limited extent. Tincture of iodine may also be applied in similar cases. Chronic eczema of the legs, with thickening, may often be successfully treated by the rubber bandage. The same condition of the hands may be treated with rubber gloves. Rhagades may be treated by green soap or by a ten per cent. solution of salicylic acid in liquor gutta perchæ. Instead of tar, the infiltration in chronic cases of eczema may be treated by the washing with green soap and the subsequent application of a mercurial salve added to the diachylon or zinc ointment.

The special treatment for eczema of the different regions requires brief notice.

Eczema Capitis.—If lice are present they must be destroyed by kerosene. Crusts are to be removed by oil, and, in the case of children, the hair should be cut short, so as to allow of the application of ointments. In acute cases, alkaline lotions are to be used; in subacute, ointments; and in the squamous form, either washing with green soap or using a tar preparation.

Eczema of the Face should be treated by zinc or diachylon salve and tar, according to the pathological condition. When seated in the hairy part, the hairs should be cut short with scissors in preference to shaving. If very persistent, epilation may be necessary.

Eczema of eyelids is sometimes very obstinate. If it does not yield to the usual treatment it is better to epilate and apply a solution of caustic potash to the lids, as already described for chronic eczema. An ointment of the red iodide of mercury (vaseline ℥ i. ; hydr. biniod. gr. i.), applied along the edge of the lid once a day is often very useful.

Eczema of the lips is to be treated in the usual manner for eczema of the general surface. Any nasal catarrh present should be treated. Rhagades are to be touched with green soap. An ointment of zinc, bismuth and glycerine (ung. zinci oxidi, ℥ i. ; bismuth, subnit. ʒ i. ; glycerine ʒ ii.) is useful in healing the fissures and keeping the parts soft.

Eczema of the nipples is usually very obstinate. After each time of nursing the nipple should be washed with warm water and borax, then dried, and the mucilage preparation of Unna applied. Bismuth powder is often of benefit. Fissures should be touched with nitrate of silver to prevent mastitis if possible.

Eczema of the genitals is to be treated on the same principles as eczema of the general surface. The parts should be separated as much as possible with absorbent borated cotton in the acute stage. Hot water applications are sometimes useful for the removal of the infiltration and itching of the scrotum. In eczema of the anal region the bowels should be kept regular and any fissures present treated. A suspensory bandage should be worn.

Eczema of the hands and feet.—Eczema of these parts has a tendency to assume the chronic squamous form. The acute stage is to be treated in the usual manner. In the chronic stage if fissures form between the toes each toe should be separately enveloped with diachylon salve spread on strips of linen. Rubber gloves soften the epidermis and remove the fissures in the dry squamous form. They should be constantly worn on the hands, and washed twice a day with cold water.

Eczema of the nails.—When the nails are attacked they should be scraped thin and tar applied. Green soap can be used by means of a glove finger.

Eczema cruris.—In this form the cause requires special at-

tention. Varicose veins and an œdematous condition of the tissues demand support in the form of a bandage. If the case is severe it may be necessary to confine the patient to bed and elevate the leg so as to get rid of the stasic hyperæmia and œdema. The eruption is to be treated on the principles already laid down. In chronic cases with considerable scaling and thickening, the rubber bandage is of great service, as it supports the bloodvessels, removes the œdema, and thins the epidermis by preventing evaporation of the sweat. This retention of the sweat, however, in some cases gives rise to an acute eczema, so that in subacute cases I have applied the bandage over a linen one in order not to lose the beneficial effects of the constant support it gives to the bloodvessels. In this article we have followed the plan of basing the indications for treatment upon the pathological conditions present and not upon the duration of the disease in a clinical sense, hence each patch of eruption, if there are more than one present, must have its appropriate treatment independently of the condition of the other patches. Thus it may happen that on the same individual the soothing, the stimulating and the absorbent remedies are being applied at the same time to different parts of the body. In all cases we must not forget to attend to any internal disorders, either functional or organic, if we wish to cure our patient rapidly and prevent relapses.

DERMATITIS.

Dermatitis, or inflammation of the skin, occurs under a variety of conditions ; for either the essential or some secondary phenomenon of many of the affections considered in this work, consists of an inflammatory condition of the general integument. Thus the skin lesions of the eruptive fevers, of some of the animal poisons, or of the exudative diseases, are varieties of dermatitis. But the forms of dermatitis, we are at present considering, are those in which the inflammation is the primary lesion, and is directly caused by irritants to the skin, either from without, or through the medium of the blood.

The inflammation thus set up may vary in intensity from a state which is hardly more than an erythema to a papular, vesicular, pustular, bullous, or even gangrenous condition. The ordinary phenomena of inflammation, heat, redness, pain, and swelling are present; and the process may end in resolution, in suppuration, or even in necrobiosis; or again, it may only partially subside, and a chronic dermatitis result. This idiopathic dermatitis may be divided, from an etiological point of view, into two main classes: First, *dermatitis traumatica*, being that variety due to the action of external irritants or violence; and, second, *dermatitis venenosa*, the kind due to the action of substances, usually medicinal, which act as irritants during the process of excretion. *Dermatitis calorica*, including both *combustio* and *congelatio*, would probably come under the first head, but their common occurrence and practical importance renders it necessary for us to give special attention to these forms of dermatitis, and their consideration is deferred until the discussion of the more infrequent varieties.

From a pathological, or rather from a clinical point of view, other divisions are to be observed. Thus we have *d. erythematosa*, the least severe form of the disease, characterized by redness and slight serous infiltrations, and usually ending in resolution; *d. phlegmonosa*, with increased plastic infiltration, and a tendency to suppuration; *d. diphtheritica*, where there is marked fibrinous exudation; *d. escharotica et gangrenosa*, the process being severe enough to cause death *en masse* of the affected portions of skin; *d. bullosa*, with enough serous exudation present to raise the upper epidermic layer into blebs; *d. circumscripta s. diffusa*, etc., etc.

Dermatitis traumatica is commonly caused by concussions, pressure, as of tight clothing, or bandages, etc. Excoriations from scratching are one of its commonest manifestations, and form an important part of the lesions of the itchy skin diseases, as pediculosis, scabies, eczema, pruritus, etc. The dermatitis thus set up usually quickly subsides on removal of its cause, often leaving a pigmentation of the skin behind. This is especially marked in cases that have suffered for years from pe-

diculosis, in which the constant pressure of excoriations on varying parts of the skin cause a peculiar general patchy, dark-brown discoloration. The dermatitis itself subsides rapidly on removal of the cause and use of some soothing applications.

Dermatitis venenata.—Among the agents well known to possess the power of causing inflammation of the skin when brought in contact with it, apart from the chemical irritants, the plants of the rhus family stand prominent. The poisonous principle is reported by Dr. Maisch to be a volatile acid—toxicodendric acid—and is present in several members of the family. Two varieties of rhus are well known in North America; they are r. venenata, the poison sumach or poison dogwood, and r. toxicodendron, the poison ivy or poison oak. The poison is very volatile, and actual contact is by no means necessary for the production of the peculiar dermatitis. Susceptibility to its influence varies much; some persons are poisoned by merely passing in the vicinity of these plants; others seem to be able to handle them with impunity.

The dermatitis caused by rhus may be simply erythematous, or it may be vesicular, pustular, or bullous. In most cases the plant has been handled, and, by means of the hands, other parts, notably the face and genitals, become also affected. The eruption begins with redness, heat, swelling, œdema of the skin, and much itching. The dermatitis, though chiefly located around the parts mentioned, is not confined to them, but spreads to a greater or less extent over the whole body. The lesion is most often an erythema; vesicles are commonly present; they are quite small, and situated on an œdematous, inflamed base,and afterward often become pustular. In some cases the serous infiltration and swelling is very marked, and causes considerable disfigurement, especially is this the case around the male genitals, on acconnt of its specially loose subcutaneous connective tissue.

Ultimately the vesicles rupture and dry up into crusts; these fall off, and the erythema subsides. The disease is acute, and runs its course in from two to six weeks.

As regards treatment, soothing lotions and bland alkalies in

ternally, are indicated, as also are alkalies, bicarbonate of soda and borax locally, in solution or as dusting powders. Lead and opium wash, or black wash are useful. It is claimed that one of the best means of treatment is by grindelia robusta, which may be used as a lotion in the strength of ʒ i. of the fluid extract to ℥ vi. of water. The vegetable astringents are to be recommended. Later, when the process has become more chronic, corrosive sublimate wash, gr. i. to the ounce, or the usual remedies for chronic dermatitis may be used.

Various other substances, though less commonly, cause dermatitis when brought in contact with the skin. Thus, many of the aniline dyes used for coloring cheap flannel goods are poisonous. The feet are sometimes inflamed from wearing the cheap, highly-colored stockings before they are washed ; and the dye of the common red flannels so extensively used for underwear, causes a papular or even pustular eruption upon some skins.

Various drugs, cantharides, savin, tartar emetic, mezereon, etc., will cause dermatitis if applied locally, as will arnica occasionally. The small pustular eruption of croton oil is well known. Mercurial ointment, if very freely applied, causes a similar eruption.

A peculiar form of inflammation of the skin is the so-called *dermatitis gangrenosa*, of which we distinguish an idiopathic and a symptomatic variety. Idiopathic gangrenous dermatitis begins as circular, erythematous, dark red spots, which tend to appear symmetrically, and may be hyperæsthetic or anæsthetic. General symptoms, malaise and feverishness accompanying the disease. The skin lesion goes on to gangrene and sloughing ; it usually ends in recovery, but may have a fatal termination. A remarkable case of the disease has been reported by Rooke, in which no less than thirty-six different patches of skin, varying in size form an area which could be covered by a quarter of a dollar to one which embraced one-third of the superficies of a mamma, became gangrenous, sometimes with extraordinary rapidity ; the case ended in recovery. Fagge, Brodie, and Stockwell have reported cases. Petri has described his own

case. Considerable general disturbance preceded the appearance of numerous hæmorrhagic macules, which were markedly anæsthetic. Later, large blebs, often bloody, formed ; there was extreme exhaustion, and superficial gangrene of the arm occurred. It was six months before he finally recovered.

Spontaneous gangrene of the skin is known to occur in connection with diabetes. The rapidity with which local gangrene occurs under the slightest provocation in some paraplegias and hemiplegias, and in some of the nervous diseases is well recognized. It may occur in a few days, or even in a few hours, after the onset of the nervous symptoms.

Cases are on record in which various agents have been employed by persons who desired to simulate these forms of dermatitis ; acids and cantharides for bullæ, turpentine to imitate erythema, etc.

Dermatitis medicamentosa.—There remains to be considered a set of skin eruptions of inflammatory nature which are of especial interest because they occur as the result of the exhibition of medicinal agents, and also because in many cases they simulate very closely other integumentary disorders. Of late years quite a number of drugs have been added to the list of those that are known to cause eruptions and efflorescences upon the skin ; probably they number twenty or more, most of them in common use.

In general, persons with coarse, oily skins are more prone than others to suffer from these eruptions. Some of them come on only after the system has been thoroughly impregnated with the drug. They are usually pustular, and the particular substance has in many cases been found in the pus. They seem to be largely due to an attempt on the part of the glandular structures of the skin to eliminate the foreign matter, with consequent irritation and inflammation of these organs. The common iodine and bromine eruptions are familiar examples. Others, again, cause an exanthematic eruption, with general symptoms, chill, fever, gastric disturbance, malaise, etc. Here saturation of the system does not seem necessary, the cutaneous symptoms appearing very soon after the absorption

of the medicine ; nor is the immediate local cause present, as in the first case.

Arsenic.—Arsenic usually causes a papular eruption, looking like syphilis or erythema multiforme. Occasionally it may be more diffuse, like an erysipelas ; or it may be vesicular, like herpes ; or pustular. It usually occurs on the face, neck and hands, and lasts one to two weeks. An eruption resembling urticaria, and even a purpuric one has been described.

Atropia or *belladonna* causes a scarlatinoid rash, which is liable to appear within a very short time after the exhibition of even very small doses of the drug. It usually affects only the face, neck and chest, and is more often seen in children than in adults. Dryness of the throat, headache and general malaise accompany it. There is no fever or subsequent desquamation. It may be caused by external applications, as by the use of belladonna ointment. It is one of the commonest of the class of eruptions from drugs.

Bromine—Bromides.—Here the eruption does not usually occur until the system has been saturated with the drug. It consists of an acne, which appears first on the forehead and face, later affecting the chest and back. Occasionally furuncles, or more diffuse purulent accumulations, may occur. Sometimes papules as well as pustules may be present, and the disease simulate a maculo-papular syphiloderm very closely. Bullous and eczematous eruptions are also described. These troubles are all more likely to occur in individuals with thick, oily skins ; the plan of giving a small dose of arsenic together with the bromide has been successful in preventing the eruption. Bromine has been demonstrated in the contents of the pustules. Ringer states that the ammonium bromide is most likely to cause acne.

Cannabis Indica.—A papulo-vesicular eruption of small size, and covering the whole body has been recorded. It occurred within twelve hours after a full dose of the drug, and disappeared in a few days. It is very rare.

Chloral is liable, especially if given with stimulants, to cause a dusky red erythematous, or scarlatinoid eruption, occurring

on the face, neck and extremities. Under prolonged use of the drug, fever, glandular enlargements, vesicles, petechiæ, ulceration, etc., may occur; and death, with symptoms of purpura hæmorrhagica, has been recorded.

Copaiba quite commonly causes a rash, sometimes almost immediately after ingestion of the drug. It consists of bright red papulæ or maculo-papules, resembling urticaria and erythema multiforme, and very itchy. It occurs by preference upon the extremities, but may cover the whole surface. It lasts only a few days.

Cubebs very rarely causes a skin eruption, and then only in young subjects who are saturated with it. It consists of a more or less extended, bright red discoloration of the skin, with millet-seed papules, coalescent in places, scattered over it. There are no other symptoms, and it disappears with brawny desquamation a few days after the medicine is stopped.

Digitalis.—Papular and scarlatiniform eruptions have been observed from digitalis.

Iodine—Iodides.—These are very common causes of medicinal rashes, which exhibit themselves in a variety of forms. An erythematous form appears on forearms, face and neck. The papular form is rarer, as is the vesicular, which occurs on the chest and limbs, etc., and is accompanied by severe itching. A markedly eczematous eruption with abundant secretion has been noticed. The pustular eruption is the commonest, and resembles that from bromine, both in appearance and in site. It is usually acne form, but may be more diffuse. Iodine has been found in the pus. A bullous eruption has been seen, occurring chiefly on the head and neck. The small vesicles gradually become blebs, and their contents may remain serous, or become purulent, or even sanguinolent. Purpura from iodine is also known. It usually appears on the legs; it may become hæmorrhagic, and has been known to prove fatal. All the lesions usually disappear rapidly when the remedy is discontinued.

Mercury.—A diffuse, deep red erysipelatoid eruption has been seen from small doses of hydrargyrum. The skin is

smooth and itchy; first the face alone is invaded, but it gradually extends over the body.

Opium.—Morphia.—An erythematous eruption, looking usually like the punctiform scarlatina rash, appears upon the chest and flexor surfaces of the limbs in some cases. In certain individuals very minute doses of morphia will cause it. According to the severity it may only last a few hours and disappear, or it may persist for several days, and be followed by desquamation. Strange to say, profuse sweating and sudamina have also been noticed.

Phosphoric Acid.—A bullous eruption, looking like pemphigus, has been reported from this drug.

Quinine.—An eruption, erythematous in character, and sometimes resembling measles, and at other times looking like scarlatina, has been quite frequently noticed after the exhibition of quinine, even in very small doses. It first appears on face and neck, and then spreads over the body. A chill, fever, nausea, headache, etc., precede the eruption, and injection of the conjunctivæ and redness and dryness of the naso-pharyngeal passages accompany it. Burning and itching is severe, and it ends in desquamation. A papular and a purpuric form have also been noticed.

Salicylic Acid.—Diffuse erythema, with general symptoms, fever, etc., has been noticed from large doses of this drug. An urticaria has also been described, as also has the occur. rence of ecchymotic patches upon the back, and vesicles and pustules upon the hands and feet, with much sweating. Small doses do not seem to cause the eruptions. They soon disappear when the remedy is stopped.

Santonine.—Urticaria, with oedema of the lids, etc., has been reported from santonine. It subsided in a short time.

Stramonium.—An erythema has been noticed from its use.

Strychnia.—A scarlatina form of rash has been reported after the use of 1-24 grain of the remedy.

Turpentine.—Large doses may cause an erythematous, or even papular rash over the face and upper trunk. It is usually very itchy. A vesicular eruption has also been observed.

A more detailed account of this interesting set of eruptions, as well as a fairly full bibliography of the subject, is to be found in Duhring—Diseases of the Skin ; article, Dermatitis.

COMBUSTIO.

Synonyms..—Dermatitis combustionis ; burns.

Definition.—An inflammation of the skin, or of the skin and the deeper tissues, caused by the action of excessive heat.

Symptoms.—Following Kaposi, we will divide burns of the integument into three classes—the classes being named in accordance with the lesion of the skin produced by the destructive agent. These classes are :

1. *Dermatitis ambustionis erythematosa.*
2. *Dermatitis ambustionis bullosa.*
3. *Dermatitis ambustionis escharotica.*

Symptoms.—The dermatitis from heat like that caused by cold, ought perhaps not to be considered separately from inflammations of the skin from other causes, such as dermatitis venenata, or dermatitis traumatica. Pathologically, the processes are alike. But inflammations of the skin from this cause are so common, and of such practical importance, that, under the name of combustio, they usually receive special consideration in works on dermatology. Both burns and scalds are included under this head. We will consider it under its three heads or varieties, taking up first the erythematous form.

1. *Dermatitis Ambustionis Erythematosa.*—In this, the least severe of the various forms of burn under consideration, the action of the irritant, be it flame, or steam, or hot solids or liquids, has been momentary, or its intensity has not been great. The skin is hyperæmic, and evenly-colored pink or reddish. It looks very like a patch of erysipelas, but the redness is not so vivid, nor are the borders so distinct. The redness disappears on pressure, and leaves a yellowish stain behind. There is slight swelling, and some stinging, burning pain.

The inflammation does not advance beyond the first stage,

and soon commences to retrogress. The dilatation of the small vessels passes away, the moderate amount of exudation which may be present is soon absorbed. The redness fades within a few days into a brownish tint, and the process ends with desquamation of the epidermis.

In sensitive cases a moderate degree of fever accompanies the local swelling, heat, and pain.

A moderate dermatitis of this kind is common enough from the effects of the summer sun on exposed parts of the person, or from the action of moderately hot water, or from momentary contact with flame. The process lasts perhaps two weeks, and leaves the skin somewhat pigmented.

2. *Dermatitis Ambustionis Bullosa.*—In this form of burn the irritant is of far greater intensity ; the hyperæmia is very marked, and liquid and formed elements escape from the vessels, the transudation of serum into the upper layers of the epidermis causing the formation of bullæ and blebs. It corresponds to the second degree of burn of the surgeons.

The bullæ vary much in size. Where the skin is thin, they form large semi-transparent, globular blebs, filled with yellowish serum ; where it is thick, as on the palms of the hands and the soles of the feet, they form flat elevations. If the amount of exudation is very great, the epidermis may be detached over large extents of tissue, or hang in shreds from the surface. Usually some parts only of the surface are affected to this degree, the rest being only of the erythematous form.

Under the serum we find the vessels of the subjacent papillæ dilated ; the connective tissue fibres are swollen and interspersed with cells. When the top of the bleb is removed, and the fluid drains off, we see below the yellowish-gray pulp of the swollen rete-cells.

A more prolonged contact with hot air or flame, or steam or hot metals, etc., is needed to produce this more intense degree of burn.

The local dermatitis runs its course, and when it has ceased, and no more exudation and proliferation occurs, the blebs and their contents, if left to themselves, dry up into crusts, and

epidermis formation takes place beneath them. If on the other hand they have ruptured, the cell-proliferation of the tissue beneath becomes very active ; the young cells accumulate in such quantities as to be cast off as pus, and the papillæ appear as red points on a grayish, suppurating base. As the inflammation subsides, cell proliferation becomes less active, pus formation diminishes and eventually stops, and the new cells begin, to undergo the ordinary changes, and form a new epidermis.

In this degree of combustio scar-tissue is not necessarily formed, though small cicatrices may occur where the papillæ have been destroyed.

The pain and the febrile reaction is far severer in this than in the erythematous form. It is especially painful when the blebs are ruptured and the papillæ exposed over large tracts of surface. Swellings of the neighboring lymphatic glands commonly occur. Extensive cases of burn to this degree, or even more limited cases when they occur in children, or in old persons, or in those debilitated from any cause, are very serious indeed, and present clinically most of the features of the third and severest degree of burn.

3. *Dermatitis Ambustionis Escharotica.*—Here the irritant has been severe enough to cause mortification, absolute death of the skin and perhaps deeper tissues. It includes all burns beyond the third degree of the ordinary classification. We see it from the direct application of flame, of molten metals, of exploding gas or steam, or boiling liquids. We find the skin usually brownish, or black, though it may occasionally be white and smooth, and apparently unaltered ; but it is always dead ; sensation is gone ; and it feels hard and dry to the touch. In the worst cases the skin is absolutely carbonized ; it is a dead, dark brown mass, marked by arborescent tracings which show where once were bloodvessels and their contents. If hot steam or water has been the active agent, the skin is tough and white, as if boiled. In other cases, as from lime burns, it is tanned. But in every case it is entirely destroyed as a living tissue.

The dead mass acts exactly like any other mortified part; it causes inflammation of the surrounding skin, which has probably already been irritated by the less intense action of the same agent that caused the slough. By the third to the fifth day reactive inflammation sets in, and a line of suppuration begins to mark the division between the living and the dead tissue. In one to two weeks the mortified mass is cast off, and leaves a deep, irregular, suppurating wound. This wound heals by granulation, and when the cavity is filled, the new epidermis starts from the healthy margin and from any papillæ that may have been left intact in any part of the wound. Scar-tissue, new connective tissue without papillæ, hair follicles or glandular structures, replace the destroyed integument, it shrinks, and various deformities are caused by the contraction of the irregular and nodular cicatrix.

If the deeper parts, the muscles, etc., are affected, the injury is usually so severe as to destroy life at once by shock.

Such then, in a brief way, are the local effects of heat applied to the surface of the body; but there are certain very important general symptoms that demand our attention. In severe cases, whether from depth of tissue or extent of surface involved, the general condition completely overshadows the local trouble. Perhaps the following description of a typical case, condensed from Kaposi, will give us the best possible picture of the effects of a grave injury of this nature. The patient is suffering from an extensive burn due to the setting on fire of the clothing:

"An hour or so after the catastrophe we find the following state of affairs:

"The hair of the face and head is singed; and parts of the hands, arms, face, neck, trunk, and legs are burnt to a varying degree. Where the clothing has fitted tight, as around the waist, the damage is usually least.

"The greater part of the lesion is of the first or second degree; the skin is reddened over a greater or lesser extent; blebs are present on various parts. But there are spots on the face, on the breast and back, which are black, carbonized, and show where the burn has reached the third degree.

"As soon as the wounds are properly dressed, the furious excitement and wild cries of the patient subside; the pain ceases; and he becomes rational, and can give a detailed account of the occurrence of the accident.

"He lies in comparative quiet for several hours. He still suffers burning pain, which he expresses by a low moaning. No urine is voided, and if we pass in a catheter, we usually find none in the bladder, or at most a few drops of albuminous or even bloody fluid.

"By five or six hours the patient's quietude begins to deepen into apathy, though he can still be roused, and answers questions intelligently, he sighs and gapes occasionally, and lies with closed eyes. Repeated deep inspirations, with ructus or singultus, now appear, signs all of evil omen; soon vomiting of the remains of food, or of bile, or, rarely, of blood occurs.

A stage of restlessness now sets in; the patient throws himself about the bed; he no longer answers questions rationally. He loses consciousness, and clonic spasms and opisthotonos appear. The delirium is followed by sopor; or the apathetic stage may merge into this without the intervention of the delirious one. The respirations become rapid and shallow; the pulse is quick and feeble.

"The patient dies either in a stupor, or in a condition of excitement and wild delirium. Death occurs in eighteen to forty-eight hours."

What then is the cause of death in these cases? Surely not the local lesion directly, since the patient sinks before any inflammation can begin. Various theories have been advanced. Tappenier holds it to be due to the sudden abstraction from the system of so large an amount of lymph. But in death from diffuse burns of the first degree this can hardly be the cause. Von Lesser has drawn attention to the fact that many of the red corpuscles in these cases are changed in shape or destroyed, whilst even of those apparently intact, many have lost their oxygen and nutrition-bearing powers; in other words, the patient is suffering from acute oligocythæmia, and he dies from

consequent fall of the body temperature. Hoppe-Seyler favors the older theory that the lethal issue is due to the retention in the system of the products of excretion and of the disintegrated tissues (especially ammonia carbonate). Sonnenberg believes death to be due to superheating of the blood and consequent cardiac failure; yet the immediate sinking of the body temperature is a well known fact in these cases. It is held by others that the destruction of the perspiratory glands over so large a tract of surface is the cause, and they refer to the rapid death of animals whose skins have been varnished; though there is no good reason why the remaining sweat-glands and the kidneys should not be able to do the work of the destroyed emunctories. In fact, in the majority of cases the kidneys themselves cease to act. Probably the correct view is the one adopted by Erichsen, viz., that death in these faudroyante cases is due to nervous shock pure and simple. Hence it occurs in burns of every kind, from any cause, and whatever chemical change has been wrought in the tissues.

If the patient survives this first stage, the local trouble rises into prominence, and inflammation, suppuration, loosening of the slough and granulation occur as above described. The injured person is subject, of course, to the ordinary dangers which surround any surgical patient — erysipelas, pyæmia, pneumonia, etc.; but in some cases they die rapidly of collapse, even in the second and third weeks, after the granulation process is fully established.

Anatomy.—The pathology is simply that of a dermatitis, more or less acute, and perhaps combined with inflammation of the deeper parts, together with certain secondary lesions. On the skin itself we find the appearances described in the symptomatology; simple hyperæmia, or severer inflammation, sloughs, suppurating wounds. Only in the severest forms do the deeper parts, the muscles, etc., participate in the inflammatory process. In the worst cases the affected areas are dead, even carbonized.

A curious sequela which occurs during the stage of reaction and inflammation, is the perforating ulcer of the duodenum.

The cause of the ulceration is not known. It may cause death by perforation and peritonitis, or by opening a branch of the hepatic artery. They usually occur about the tenth day, and sudden collapse is frequently the only symptom by which they make their presence known, though bloody stools, pain in the right hypochondriac region or vomiting, may occur.

Pneumonia is a not uncommon occurrence, and presents no special appearance; nor do erysipelas, septicæmia, etc.

In the "faudroyante" cases congestion of the brain and membranes, as well as of the various other organs, is found.

Etiology.—The action of flame or of hot or exploding vapors, of hot solids or liquids, of caustics, acid or alkali, of lightning, of electricity, or of the sun, are the cause of these injuries.

Diagnosis is clear; the history is always obtainable from the patient or his friends, or can be surmised from surrounding circumstances.

Prognosis.—The prognosis of burns depends upon a variety of circumstances, but especially upon the extent and depth of the lesion, and the age and general condition of the patient. Generally it is favorable in burns of the first and second degrees, provided they are not too extensive; but it is unfavorable in any case in persons of delicate health, or in infants, or in those suffering from Bright's disease, etc. Burns of the third degree, even when of slight extent, and in young persons, are often fatal; they are almost invariably so if conjoined with burns of the first or second degree involving as much as one-third of the surface of the body.

The occurrence of ischuria after an accident of this kind, or the appearance of singultus or vomiting, is of bad omen.

The cicatrices left by burns may cause deformities; occurring round the limbs or fingers, may hinder the patient in his avocation, or cause disgusting deformities of the face.

Treatment.—As far as the constitutional treatment goes, our main effort, in severe burns, is to tide the patient over the stage of depression into which he falls soon after the injury. He is in pain, is pale, cold, and perhaps sinking from shock;

he should have a moderate dose of an alcoholic, preferably hot, together with a full dose of opium.

In the later stages general stimulating and tonic treatment, wines, quinine and good nourishment must be employed, with morphine, as may be necessary.

As regards local treatment, our first object must be to allay the agonizing pain, and for that purpose it is necessary to protect the injured surface from the air. Often the sprinkling of the part with starch or flour, or cold water applications, etc., will be sufficient, especially in burns of only the first erythematous grade. Bullæ, which by their tension increase the pain, should be pricked, but not cut away, since they form the best possible protection for the denuded corium.

In burns of the severest kind the burned clothes should be cut away, the patient laid upon a blanket, and the first dressing applied. Sprinkling the whole surface thickly but evenly with fine wheaten flour by means of a dredger is to be recommended, this forms with the serum and discharges a thick and impervious coating. Carron oil (equal parts of ol. lini and aq. calcis) or olive oil alone are good. The dressings of lint or cotton should be well soaked in them. Powdered soda, in slight cases, or a two per cent. solution of soda in burns of the second and third degree, are excellent. Mitzeche paints the burns with several layers of varnish to which, while warm, five per cent. of salycilic acid has been added. Whatever application is used, it is important not to remove the dressings for several days, in fact, until loosened by the discharge; and they should be kept in good condition by renewed applications of the agent used.

But in cases where it can be employed there is no treatment so warmly to be recommended as that of Hebra's water-bed. Protection, avoidance of pain, cleanliness, etc., all the indications are well filled by this mode of treatment; it needs, of course, certain special appliances, but its advantages are manifest. As soon as seen after the injury, the patient may be placed in the bath. Its temperature at first must be low, but as soon as the patient is in it, it must quickly be raised to 100°,

or till the patient feels comfortable. He may lie on a mattress, or better, on a framework that can be raised or lowered by rack and pinion. In this bath the patient must stay day and night, being only raised up occasionally to meet the demands of nature. He very soon feels the benefits of the treatment by the absence of pain, and the return of sleep and appetite. In the water the granulation of his wounds goes on splendidly, even exuberantly ; there are not retained foul and decomposing secretions ; there are no adherent dressings to be removed ; cleanliness is secured to an extent which not the most careful nurse could obtain with the ordinary treatment. The sloughs are cast off more quickly; the fever goes, and there is less danger than with any mode of treatment of the occurrence of erysipelas or septicæmia.

If the patient be not treated by this plan, one of the aforementioned applications must be used. In three to five days suppuration will have begun, and it will be necessary to remove the dressings to prevent retention and decomposition of the secretions. The wounds are then to be dressed with any simple ointment,—zinc oxide, carbolic acid ointment, iodoform in ointment, or powder, etc. The granulations are very liable to be exuberant, and they are to be repressed by the solid stick, by a one-fourth to one per cent. solution or ointment of nitrate of silver. This is a very important point, for if the granulations are exuberant the scars will be very thick and nodular, the contractures and deformities far greater than is necessary.

When these contractures and deformities have occurred, various remedial operations may be undertaken, which will be found detailed in the text books on general surgery.

CONGELATIO.

Syn.—Dermatitis congelationis ; frost-bite.

Definition.—Inflammation of the skin, combined perhaps with inflammation of the deeper parts, caused by exposure to excessive cold.

Symptoms.—Dermatitis is not so commonly due to cold as it

is to heat ; yet it is seen even in the more temporate climates during the winter. As in combustio, we may divide the injuries due to low temperature into three degrees.

1. *Dermatitis congelationis erythematosa.*
2. *Dermatitis congelationis bullosa.*
3. *Dermatitis congelationis escharotica.*

In healthy and vigorous individuals long continued exposure to cold is necessary before inflammation is set up ; but in weakly and predisposed persons a temperature even of several degrees above the freezing point will cause these changes. Especially is this the case with the first or slightest degree of congelatio, which we will first consider.

1. *Dermatitis congelationis erythematosa* corresponds to the ordinary chilblains, or perniones. They occur on the hands and feet, more rarely upon the other extremities, as the nose and ears. They consist of elevations of a bright red, or livid color, and about the size of a small nut. When exposed to the cold they are anæmic, white, and without sensation ; but when warmed they become livid, and cause a most intolerable itching-heat, and pain. Hence they are noticed chiefly in the evening. when sitting by the fire, or when warm in bed ; during the day they often do not trouble the patient at all. Eventually paresis and excessive dilatation of the vessels occurs at the spot ; passive hyperæmia, serous infiltration and sluggish inflammatory processes set in. Bullæ may appear, which, when they break leave behind an indolent, ulcerating surface—pernio ulcerans, which may be accompanied by constitutional symptoms. This forms the second degree, or

2. *Dermatitis congelationis bullosa.* Here the inflammation has been intense enough to cause serous transudation and the formation of blebs on the surface. The appearance and course of the inflammation is exactly the same as in the bullous form of combustio, to which the reader is referred.

3. *Dermatitis congelationis escharotica.* In this, the severest form of frost-bite, either the skin is covered with large bullæ, with perhaps hæmorrhagic contents, or it may be only turned to an ashen-white color, and is cold and senseless. The vitality

of the part may be entirely destroyed, or it may be merely suspended. In the latter case, as the tissues regain their warmth, the part becomes red, hyperæmic, the patient suffers from burning and tingling pain, and a more or less severe inflammation is set up. If on the other hand the vitality of the cells has been entirely destroyed, it appears mottled from the retained and frozen blood ; it is gangrenous when thawed out ; and the usual changes, reactive inflammation of the healthy parts, formation of a line of suppuration, casting off of the slough, etc., occur. It may take several days, or even weeks before it becomes evident how much of the tissue has been destroyed. Phlebitis, septicæmia, and death often occur in the gangrenous form of congelatio.

Besides these local effects, certain well-known constitutional results of cold must be mentioned. There is first a period of general stimulation, but on prolonged exposure, the patient becomes dull and stupid. The dilation is followed by contraction of the superficial vessels ; the blood accumulates in the central organs. An overwhelming desire to sleep comes over the sufferer ; he becomes comatose, and dies a probably painless death.

Anatomy.—Is in the main the same as in dermatitis calorica. The appearances in the first and second degrees of frost bite have been described under the head of symptomatology. In the third degree the part is at first white, cold, and senseless, or if it has been thoroughly frozen, it may look mottled. Later the inflammation of the skin, the phlyctenæ, the sloughs, and the ulcerations, present nothing to distinguish them from dermatitis from other sources.

Duodenal ulcers occur with dermatitis from this cause as well as from heat ; they have the same appearance and run a similar course.

Congestion of the internal organs, especially of the lungs and brain, is found in cases that die early. In those that succumb later, the ordinary lesions of phlebitis, pyæmia, etc., will be found.

Etiology.—Contact with cold air, with ice or snow, with very cold metals, are the usual sources of this trouble.

Diagnosis.—The history can almost always be obtained, either from the patient or his friends, or from the surrounding circumstances. Sometimes frost-bites of the second and third degrees are very difficult to distinguish from burns or dermatitis from poisons.

Prognosis is good in frost-bites of the ordinary kind, of the first and second degrees. But it is always doubtful in the escharotic form; for its very occurrence is an indication of low vital powers; reaction is very slow; it is many days before it can be said which parts will, and which will not be saved. Even where only a few fingers and toes are involved, it is not possible to say how far the gangrenous forces will extend.

Anæmic and weakly individuals are especially predisposed to injuries from cold; they have chilblains and frost-bites at temperatures where ordinary individuals suffer no inconvenience at all.

Exposure to cold is very rapidly fatal to infants and old people.

Treatment.—For the constitutional effects of cold various measures are to be employed, including the removal out of the cold atmosphere, the administration of hot alcoholic drinks, frictions of the surface, etc.

As regards the frozen part itself, one thing must always be borne in mind, namely, that either in the part itself, if it has not been destroyed, or in the neighboring tissues, if complete disorganization has occurred, dermatitis, inflammatory action, will necessarily set in. We must, therefore, avoid any method of treatment that will tend to increase the violence of the inevitable reaction in the tissue whose vitality was probably not up to the normal in the first place, and which has been still further lowered by the injury. We must endeavor to bring about reaction as slowly as is compatible with the patient's safety. He should be put in a cold room, the frozen parts rubbed with snow, or with cloths dipped in cold water; a little later dry cloths may be employed, and a warm drink given. In cases apparently dead, artificial respiration must be employed, and should be persisted in for a long time even when there is

no sign of life; for persons have recovered after several hours of suspended animation from cold.

Neurotic portions of tissue should be left to detach themselves; as little interference as possible is the rule. As regards amputation of hopeless parts, it is best to wait for a line of demarcation before operating, since, according to the best authorities, more tissue is often saved thus than would at first have appeared possible.

For ordinary chilblains many remedies are recommended; hot baths, tincture of iodine, collodion, acetate of lead (10% in ointment), camphor, balsam of Peru, etc. Tight boots must especially be avoided, since by hindering the circulation they predispose to the trouble; the feet should be warmly clad. Kaposi recommends ℞. Camp. rasæ, 1 part; ceræ alb., 40 parts; ol. lini, 80 parts; bals. Peruv., 150 parts.

In anæmic individuals subject to the first and second degrees of this trouble, general tonic treatment and good nourishment is important. Tincture of the chloride of iron, given for a length of time, is often of decided benefit.

CLASS IV.

HÆMORRHAGIE: HÆMORRHAGES.

Under this heading we classify those diseases of the skin in which the essential lesion consists in the presence of blood in larger or smaller quantities outside the vascular walls, in the skin. It is true that this is occasionally seen in such diseases as zoster, small-pox, etc.; but it is as an accident, not as the principal element of the malady. It is by no means necessary for the occurrence of such hæmorrhages that actual rupture of the capillaries occur; both liquor sanguinis and corpuscles can make their way through the unbroken vessel wall.

Pressure, either internal or external, may cause this rupture or diapedesis. Thus it occurs from blows, or squeezes, from violent coughing (as in pertussis), or during an epileptic paroxysm. Any thing that weakens the resisting power of the vascular wall will with normal blood pressure cause extravasation of blood. Thus it is seen in excessive states of malnutrition, and when the epidermis has been destroyed, as by a blister, also upon ascension of mountains, etc., when the atmosphere pressure is less than usual. A good example of this last cause of extravasation is seen in dry-cupping.

In accordance with their form, a variety of extravasations are to be mentioned. Thus we have *petechiæ*—small, round or star-shaped, livid-red spots, varying in size from a pin-point to a finger-nail; *vibices*—long, narrow, streak-like lesions; *ecchymoses*—irregular red patches from the size of a dollar to that of the palm of the hand; and *ecchymomata*—variously shaped, flat or elevated tumors.

In all these cases the hæmorrhages may be either in the layers of the epidermis, or deeper down in the connective tissue of

the papillæ and corium. Once formed, they are permanent until the hæmatin of the extravasated material has undergone certain changes, and become absorbed. The vivid red, changes into purple, then into a greenish-yellow and brown, and eventually disappears.

Cutaneous hæmorrhages, which occur as the result of external injuries, are called idiopathic, whilst those which occur from internal disease conditions, are termed symptomatic hæmorrhages. *Idiopathic hæmorrhages* are usually the result of traumatisms, and most often of a concussion or a squeeze. The resulting lesion may be a hæmorrhagic bulla, or an ecchymosis, or an ecchymoma, or even a deep seated hæmorrhagic cyst may result. In certain cases the inflammation of the surrounding tissue is sufficient to cause an abscess. The bites of various insects produce minute, localized hæmorrhages. Bedbugs, fleas, and pediculi occasion the presence of circumscribed slightly swollen hyperæmic patches, with a hæmorrhagic point representing the bite in the center; the swelling disappears in a short time, but the blood extravasation persists longer. Local circulatory disturbances will also cause these idiopathic hæmorrhages. Thus we see them occurring in acute inflammatory and exudative processes, as in herpes, eczema, in granulating wounds, and very commonly upon the lower extremity in consequence of varicose veins. The weaker the connective tissue support of the vessels, and the thinner the epidermis, the more prone are they to occur. Hence, idiopathic hæmorrhages are common in very old people, after severe sickness, after childbirth, and in those who have to stand or walk much. At first such purpuric spots are of little account, but in time their occurrence becomes complicated with inflammatory changes, ulceration and chronic sores.

An interesting form is the *pupura neanatorum*, which is seen in infants in consequence of circulatory changes. It appears as numerous petechiæ spread over the body, and looking like flea-bites.

But little need be said concerning the treatment of these idiopathic purpuras. They all tend to undergo spontaneous

resolution. The local application of cold is always advantageous, and when they occur upon the lower extremity, rest in the elevated position is important. When they tend to occur in conjunction with varicose veins, support of the over-filled vessels by means of a bandage or elastic stocking is indicated.

Sympathetic Hæmorrhages, on the other hand, are local expressions of some more deep-seated malady affecting the system. Thus they are seen in the most fatal form of small-pox, as pupura variolosa, hæmorrhagic small-pox; in the oriental pest; in certain snake bites; in septicæmia, etc. They are also observed in the marasma of tuberculosis, of carcinoma, and of ergotism.

There is one form of symptomatic hæmorrhage into the skin, however, of sufficient importance to warrant our considering it under a special heading, in which the purpuric spots constitute the essential element of the disease. It is called *purpura, par excellence.*

PURPURA.

Synonyms.—Hæmorrhœa petechialis; purpura simplex; p. rheumatica; p. hæmorrhagica.

Definition.—Purpura consists in the appearance upon the skin of various sized, flat or raised, red or purple hæmorrhagic patches, not disappearing upon pressure.

Symptoms.—Three varieties of purpura are described, and, as they differ considerably, both as regards their etiology and semiology, it will be convenient to discuss them separately.

1. *Purpura Simplex.*—Here the cutaneous symptoms usually form the only manifestation of the disease; in exceptional cases slight malaise, indigestion, lassitude, etc., may be present for some days before the eruption appears. The hæmorrhagic spots may come out suddenly—may come on over night—and give rise to so little inconvenience that it is frequently several days before their presence is accidentally discovered. They form bright to bluish-red, sharply circumscribed and variously shaped spots—usually pin-point or pin-head in size, but some-

times as large as a pea. They are situated deep in the skin, which is not elevated over them, and they do not disappear upon pressure. They occur irregularly over the body, but their commencement seat is upon the lower extremities, and especially upon the flexor aspect of the thighs. Subjective symptoms, save occasionally a slight itching or soreness, are absent. In the so-called *purpura urticans*, the marked itching and the tendency to the formation of wheals near the site of the extravasations would tend to show a combination of the two affections.

P. simplex has been noticed from the employment of iodide of potassium, quinine, chloral, and salycilic acid (see Dermatitis). In some cases malaria seems to have been the cause of the eruption, and in others some fault of the nervous system occasion the so-called *neurotic purpura*. Simple purpura is a self-limited disease; in ten to fourteen days it has run its course, though the occurrence of successive "crops" of the eruption may prolong it. It occurs most frequently in the aged and debilitated.

2. *Purpura Rheumatica, or Peliosis Rheumatica.*—Here there is usually more or less rise of temperature, with lassitude, costiveness, anorexia, etc., before the disease appears. It begins with rheumatic pains in the joints, especially of the knee and foot, either with or without swelling and exudation. In about a week or earlier the eruption appears, occurring anywhere upon the body, but most distinctly upon the limbs and lower part of the abdomen. It consists of light-red or livid flat hæmorrhagic spots, not disappearing under pressure, and varying in size up to that of a finger-nail. In some cases they are slightly raised. Usually the rheumatic pains remit when the eruption appears; and the purpuric spots gradually fade through green and yellow tints until the blood is absorbed; which usually occurs in a fortnight. But in many cases successive exacerbations of the fever and rheumatoid pains, with successive crops of purpura, are observed, and the disease may last for months, or even years. Periodic hæmorrhages from the kidneys have been noted in some of these cases, as well as hæmorrhagic affections of the

internal organs, and fatal hæmorrhage into and gangrene of the velum palati and laryngeal mucous membrane (*Lewin, Henoch, etc.*). P. rheumatica occurs both in men and women, and is usually seen during middle life. It is a rare disease, and is intimately related to erythema multiforme. In some cases it occurs in conjunction with that disease, and its location is usually the same.

3. *Purpura Hæmorrhagica, or Morbus Maculosus Werlhofii.* —Here the morbid process seems to occupy an intermediate position between scorbutus and purpura simplex. It begins with marked constitutional symptoms, languor, headache, fever, etc., but not like the serious cachexia which precedes scurvy. Soon there appear upon the skin hæmorrhagic spots, varying in size from a lentil to the palm of the hand. They occur all over the body; but the face is usually exempt. Petechiæ also appear upon the mucous membranes, especially upon that of the mouth and fauces, and hæmorrhages from the mouth and nose, from the intestines and kidneys, occur more often and with greater freedom than in scorbutus. The constitutional symptoms may be very severe, fever may run high, and the disease end in collapse and death.

As a usual thing, however, Werlhofii's disease runs a benign course, and ends in recovery in two to four weeks. Relapses may occur. It is usually seen in the weak and debilitated, but it sometimes occurs in persons enjoying apparently the best of health. The petechiæ pass through the ordinary stages and are eventually absorbed.

4. Brief reference may be made here to *Scorbutus*, true scurvy, or sea scurvy. The purpura is very like that of purpura hæmorrhagica—but it is not so extensive—and is more likely to affect the subcutaneous connective-tissue, the muscles and fasciæ. The gums are softened, spongy, and covered with a dirty gray coating, and there is marked fœtor from the mouth, painful ecchymomata are common, and lead to gangrene and deep ulcerations. Complications on the part of the internal organs usually occur. But the tendency to hæmorrhages

from the mucous membranes is not so great as in morbus maculosus. The disease is chronic, slow in its onset, and is due to certain well known influences, and uniformly tends to recovery when they are removed.

Anatomy.—The extravasated blood in purpura may be situated in the papillæ, or in the subcutaneous connective tissues, etc. The bloodvessels in the neighborhood of the exudation are distended and filled with blood corpuscles. A part of the exuda-

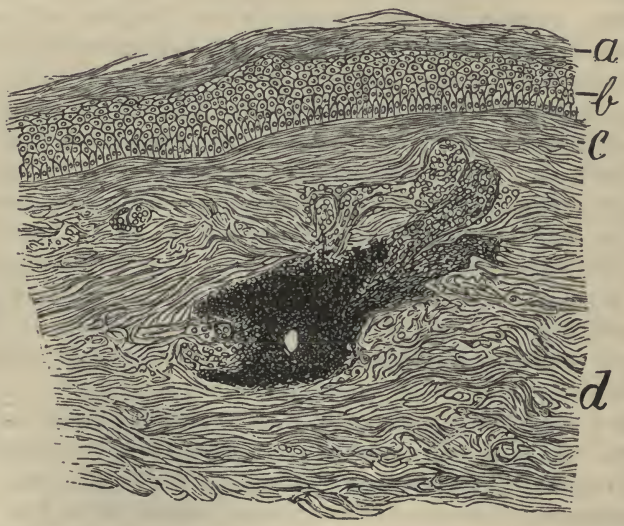


FIG. 43.—Section through a hæmorrhagic papule in peliosis rheumatica. *a*, Corneous layer; *b*, rete; upper part of corium; *d*, deep part of corium.

tion arises from rupture of the bloodvessel wall and part from diapedis.

The spots vary in size and shape with the amount of blood and the permeability of the tissue. Once outside the vessels, the blood is a foreign body, and is slowly absorbed The fluid parts are taken up first, the corpuscles and coloring matter being left behind. The hæmatin undergoes various changes, and the spot goes through the regular cycle of colors

from bright to dark red, purple, blue, green, brown, yellow, eventually to fade away entirely.

In scurvy there is probably some deep-rooted alteration in the red-blood corpuscles themselves ; at all events Kietschy has noticed them irregular and losing their shape early in the disease.

Etiology.—In p. simplex no special cause can be referred to. The subjects of the disease are usually ill-nourished and debilitated ; but we see it occurring sometimes in persons in apparently the best of health.

P. rheumatica is related, as before said, to erythema multiforme, and we know as little of the essential cause of the one as of the other disease. Both diseases are oftenest seen in young individuals, and in females, and tend to recur in spring and autumn. It is an angio-neurosis depending upon some unknown condition that changes the nutrition of the bloodvessel wall.

P. Hæmorrhagica occurs in many cases in persons living under improper hygienic conditions, and badly nourished, or who are convalescent from serious illness ; but it also attacks robust individuals. It occasionally occurs epidemically.

Scorbutus, as is well-known, occurs in consequence of improper or insufficient nourishment, want of fresh meat, of vegetables, of salt, of fresh air, etc, and is seen on ship-board and in large ill-kept penal institutions, etc.

Diagnosis.—In most cases the diagnosis of these different forms of purpura is easy. P. simplex occurs without other symptoms. In P. rheumatica the localization, pains in the joints etc.,are sufficiently diagnostic in conjunction with the eruption. In p. hæmorrhagica, the affection of the mucous membrane, the hæmorrhages, etc, are characteristic. Finally, in scurvy the peculiar etiological conditions, the affections of the gums, and the muscles, etc., will prevent mistake.

Prognosis.—In purpura simplex the prognosis is always good. P. rheumatica is more stubborn, and more likely to be subject to relapses. Its duration is indefinite, and, though it usually tends to recovery, some of the incidents detailed in the

symptomatology may render the prognosis unfavorable. P. hæmorrhagica and scurvy are more serious; it is impossible to tell the course that they will pursue. The less frequent the hæmorrhages, the scarcer and more superficial the petechiæ, the less fever there is, and the less the general nutrition of the body has suffered, the better the outlook.

Treatment will vary, with the cause of the disease. In almost all cases attention to diet and general hygiene is of the utmost importance. If the hæmorrhage is extensive, rest in bed must be insisted on.

In p. simplex, iron, quinia, belladonna, the mineral acids, etc., are useful. The chlorate of potassium, in twenty grain doses, has also been recommended.

P. rheumatica is to be treated by careful regulation of the diet, moderate use of stimulants, etc. Cold and anodyne lotions may be used if the pain is severe. The patient should be confined to bed. Besides the remedies above mentioned, ergot internally, or ergotin hypodermically, may be employed.

P. hæmorrhagica.—Here all the above remedies may be employed; especially ergotin, administered subcutaneously, has proven useful. Rest in bed must be insisted on. Oil of turpentine, acetate of lead with opium, have been successfully employed, as has electricity, after other remedies have failed. Hæmorrhages from the internal organs must be treated on general principles. For the hæmorrhages upon the skin, alum or acetic acid washes may be employed.

Scorbutus demands a diet of fresh animal and vegetable food fresh air, fruit, vegetable acids, etc. The reader is referred to the appropriate text books for details.

HÆMATIDROSIS AND HÆMOPHILIA.

Two other conditions may appropriately receive mention under this heading. The first is hæmatidrosis.

Hæmatidrosis—Hæmidrosis—Sudor Sanguinea, or bloody sweat, consists in the discharge through the sweat glands of a fluid containing blood. The fluid oozes out over a localized area,

and the eyelids, cheeks, backs of the hands, and thighs have been seen affected. It is not a bloody sweat at all, but a cutaneous hæmorrhage in which the effused fluid finds its way out through the sweat ducts. It is a very rare affection, and has always been noticed in connection with some defect of the nervous system, or in young hysterical women with menstrual irregularities. In these cases the bloody oozing has been excited by passion or some intense nervous strain. In most of the celebrated cases of "*bleeding stigmata*," the hæmatidrosis has occurred in connection with hysteria and ecstasy, etc. The bleeding spots vary in size and shape, and may occur anywhere upon the body, and is usually periodic in its occurrence. Messedaglia and Lombroso, who have studied this peculiar affection, consider it to be due to vascular paralysis, and have used belladonna internally with success.

The treatment of Hæmatidrosis is that of purpura. Finally, *hæmophilia* occurs among individuals or families, who soon become known as "bleeders." In them the slightest traumatisms are sufficient to cause extensive ecchymoses and violent hæmorrhage—their blood seems to have lost its normal coagulability, and hæmorrhage of any kind in them is controlled only with the greatest difficulty. It is hereditary, and runs in families. There is no treatment for the systemic condition—and individual cases must be managed on general surgical principles.

CLASS V.

HYPERTROPHIES.

Under this name are classed a number of affections characterized by an increase of one or all the normal tissue-elements of the skin. Sometimes the epidermis—as in chloasma and callositas is the part affected ; sometimes the papillæ are also involved—as in ichthyosis ; sometimes the corium, as in elephantiasis. As a usual thing, these hypertrophies are rather deformities than diseases ; the changes are slow, and once formed, they usually continue indefinitely unless interfered with.

LENTIGO.

Syn.—Freckle.

Definition.—Lentigo consists in an excessive localized deposit of pigment in various portions of the skin ; it appears as round or irregular, pin-head and pea-sized spots, most frequently seen upon the face and back of the hands.

Symptoms.—This common affection is seen as small, roundish spots, varying from a light yellow to a brown or even black tint. They may be only few in number and isolated ; or they may be aggregated, and coalesce. Their most usual seat is upon the face, especially upon the forehead and nose ; but they are common enough upon the hands and arms, and may be seen upon other parts of the body. They appear in both sexes, and at all ages ; in young children, however, they are rarely seen. Persons with light complexion, and especially with red hair, very commonly exhibit them ; but they occur in brunettes, and are even seen in mulattoes. They usually persist during the greater part of life, but are apt to disappear when old age sets in. They are far more marked in summer than in winter. They undoubtedly grow darker in color when

exposed to the sun ; but they occur also upon parts not usually exposed to its rays, as the buttocks and penis. There are no subjective sensations whatsoever. Freckles are more a deformity than a disease, and in many persons of blonde appearance they may be numerous and dark enough to be very unsightly.

Etiology.—The summer heat and the sun's rays are the usual causes of lentigo; yet they occur upon parts that are not exposed, forming the so-called "cold freckles." The irregular distribution of the pigment which in reality is the cause of the freckles, depends probably upon a nervous influence.

Anatomy.—A freckle consists simply in a collection of pigment granules in a circumscribed group of rete cells. Chloasma differs from lentigo only in the size and shape of the affected areas.

Treatment.—The treatment is essentially that of the next to be considered affection—chloasma—to which the reader is referred

CHLOASMA.

Syn.—Liver spot.

Definition.—Chloasma consists of an abnormal deposit of pigment in the skin, appearing as smooth, yellowish-brown or blackish patches of varying shape.

Symptoms.—In chloasma, as in the preceding affection, the skin itself is unaltered, save in that there occurs an excessive deposit of pigment in certain places. These discolored patches may be of any size or shape ; they are usually of a sharply limited outline. Their color varies from a light yellow, through the various shades of brown, almost to black. They are usually of moderate size ; but the affection may occur as a more or less diffuse discoloration of the entire integument.

In accordance with their origin, chloasmata are idiopathic or symptomatic. To the *idiopathic chloasmata* belong *lentigo*, and *ephelis ;* and also the group known as

Chloasma Traumaticum.—Here some external agent is the cause of the increased pigmentation. Thus we see it whenever there has been long-standing hyperæmia of the skin—as from

the pressure of the clothing, belts, braces, etc.—but especially from the scratching occasioned by the various itchy diseases. Urticaria, scabies, prurigo, pediculosis, etc., all occasion more or less discoloration of the integument; the more marked, the more violent and chronic the disease, and the consequent irritation of the skin by the finger-nails. It shows itself as a more or less diffuse brownish or grayish or sepia-tinted discoloration of the skin, and has been by some erroneously described as a special disease under the name of melanosis, melanoderma, melasma cutis, etc. Its seat may be of assistance to us in the diagnosis of the malady that occasions it; thus in pediculosis, the discoloration is most marked around the waist and upon the back of the neck. In prurigo it occurs especially upon the exterior surfaces of the lower extremities, etc. In these cases the discoloration is also partly due to the remains of extravasated blood.

Another variety of the idiopathic chloasma is *chloasma caloricum*, by which we mean the well-known brownish discoloration of the skin caused by exposure to the sun's rays. It appears upon any part to which the sun, wind, etc., have free access, and is very strictly limited to the exposed part. It occurs more readily in those accustomed to an in-door life, while persons with out-door occupations are usually affected to a moderate degree only, and do not "tan" readily under special exposure. The brown color soon fades upon withdrawal from the influences which caused it. The color in these cases is also partly due to a browning of the upper corneous cells.

Various chemical agents also cause discolorations of this variety, forming *chloasma toxicum*. Sinapisms, blisters by cantharides, etc., are common causes. Occasionally the pigment deposit which occurs after the use of these agents does not fade away, but persists for life.

The *symptomatic chloasmata* occur in consequence of various affections of the internal organs, as uterine diseases, tubercle, cancer, etc. They may appear as localized, well-defined spots, or as more diffuse pigmentations. The diffuse bronzing of the skin in what is called Addison's disease, may vary from a light

brown to an olive or bronze-green, being most marked in those places where pigment usually accumulates in quantity, as in the axillæ, nipples, hair, genitals, etc. It has been shown by later investigations, however, especially by Overbeck, to have no connection at all with degeneration of the supra-renal capsules, and to be due to marasmus from various causes as tuberculosis, malaria, etc. Chloasma also occurs in lepra, scleroderma, morphœa, etc.

The most important, however, of the symptomatic chloasmata is the one that is known as *chloasma uterinum*—chloasma hepaticum—or liver-spot. It occurs usually upon the face, and is most often seen to occupy the forehead and temples. The pigment is deposited in varying amount, but most abundantly in those of naturally dark skin—in brunettes. It most often appears as a larger or smaller patch upon the forehead, often extending from the scalp to the eyebrows, even upon the lids, and from temple to temple. It may also occur upon the abdomen, about the nipple, etc. The patches may vary from a yellowish to dark brown; they may be distinctly limited, or fade gradually into the surrounding skin. Their surface is perfectly smooth and normal, though seborrhœa may occasionally be present at the same time. The pigment may be evenly deposited, or it may occur in streaks and patches over the affected area. It is occasionally seen also upon the cheeks, the lips, the chin, etc. It may occur at any time during menstrual life and occurs in connection either with pregnancy or with some abnormality or defect of the utero-ovarian system. It is most commonly seen during pregnancy; but it very often occurs in sterile or unmarried women who suffer from amenorrhœa, dysmenorrhœa, hysteria, chlorosis, ovarian or uterine new growths, flexions, etc. When it occurs during pregnancy, it usually fades rapidly after delivery is accomplished, though it may not entirely disappear. It undoubtedly has some connection with the pigmentation which occurs round the nipple—linea alba, etc., in pregnancy.

Chloasmata, like the above-mentioned form, occur in men upon the forehead, and are usually seen in scrofulous subjects

or in those debilitated from overwork, excess, drink, etc., or suffering from malarial or septicæmic cachexia (cancer). They are exactly like the uterine chloasmata in external appearances.

Etiology—The causes of chloasma are very varied—and have been for the most part mentioned in the description of the different varieties. Anæmia, according to Wilson, is at least a predisposing cause to abormal pigmentary deposit. Shock, and various affections of the nervous system also seem to favor its occurrence.

In figure 44 is shown the situation of the pigment granules in tattooing. It is found in the lymph spaces of both the corium and subcutaneous tissue, whilst in chloasma proper the pigment is in the rete.

Anatomy.—The skin is unaltered with the exception of the deposit of an excessive number of pigment granules in and round the lower rete-cells. More or less yellowish-brown pigment grains are always found in that situation—even in the

Fig. 44.—Section of skin from a case of tattooing. *a*, Epidermis; *b*, corium; *c*, subcutaneous tissue; *d*, pigment granules in lymph spaces.

fairest individuals; and even in negroes the individual granules are light brown in color, but are numerous and closely packed. In the fairest individuals, pigment is found all over the skin, and is especially seen in certain regions, as around the anus, nipple, perinæum, etc.

Diagnosis.—Pityriasis versicolor is the only affection liable to be confounded with chloasma. The peculiar color, the figure outline, the extent and location upon the trunk, the hyperæmia and the furfuraceous surface, as shown by scraping with the finger nail, and, finally the microscopic appearances—all very sufficiently distinguish the former disease. Chloasma is usually darker, occurs as a simple patch, is small and seen almost always upon the forehead, the skin is normal, and the parasite will not be found in any of the scraped off scales.

Prognosis.—In itself the affection is of no account, save as a deformity. Both the idiopathic and the symptomatic forms frequently disappear with the subsidence of the exciting cause.

Treatment.—is essentially the same both for lentigo and chloasma in all its forms. First and foremost the exciting cause, be it local or general, must, if possible be removed; otherwise our efforts will be fruitless. Affections and abnormalities of the uterine system, the action of local irritants etc., must be removed. A variety of topical measures may then be employed with the idea of removing the rete cells together with the abnormal pigment deposited therein. Cantharides, mustard, mineral acids, etc., themselves cause pigmentation, and are not to be employed; but acetic acid, strong potash and soda soaps, and tincture of iodine may be used. Mercurials, however, are the best. Corrosive sublimate may be used in one to five grains to an ounce of water or alcohol—varying in strength with the susceptibility of the patient's skin, and the extent of surface to be acted upon. For the rapid removal of freckles or chloasmata from the face Hebra recommends the application of a 5 per cent. solution of corrosive sublimate by means of cloths accurately fitted to the surface to be treated, and kept on for four hours. Considerable burning is set up; the blister which forms is to be punctured in its most dependent part, and dressed with starch powder. Within a week the epidermis falls off, and the new skin will be devoid of pigment. Unforfunately it does not usually remain permanently so. Duhring recommends the use of corrosive sublimate as a lotion, containing two grains of the drug to half an ounce of the tincture

of benzoin and an ounce of almond emulsion. Tincture of iodine, repeatedly employed, or sulphur paste, or soft soap, applied continously for from twelve to twenty-four hours, will also remove the epidermis.

Various less intensely irritant preparations may be employed, causing the pigment to disappear more slowly by gradual desquamation of the skin. This may be accomplished by painting with diluted acetic acid, or daily washing with tincture of soft soap, or by a white precipitate ointment applied nightly, etc. Neumann recommends an ointment composed of equal parts of white precipitate and subnitrate of bismuth. Veratria ointment, grains 10 to the ounce, or the ointment of the nitrate of mercury, 2 drachms to the ounce, may be employed. I use an ointment of equal parts of oxide of zinc and white precipitate ointment with subnitrate of bismuth, twenty grains to the ounce, and glycerine one to two drachms to the ounce.

To complete this division of our subject, certain conditions, in which the skin is stained by other than the normal pigment, require brief mention. Thus in *icterus*, or jaundice, a uniform staining of the integument and mucous membranes occurs, and varies from the faintest yellowish tinge to a deep orange. It is due to the deposition of the biliary coloring matters in the skin, and is accompanied by marked itching. Its prognosis and treatment is that of the disease that occasioned it. *Argyria* is the name given to the condition in which the skin is stained by the deposition of metallic silver in it. It is a condition rarely seen at present, since this possible effect of the drug is well known, but it was formerly commoner, especially among the subjects of epilepsy, in whose treatment silver was used in large and long-continued doses. Cases have also been reported from the use of the solid stick in the pharynx—a portion having probably been swallowed. The skin is stained to a bluish, grayish, slate or even black color, varying with the amount of the drug deposited. The exposure to light was formerly thought to occasion the decomposition of the albuminate of silver, under which form it probably circu-

lates in the tissues; but the fact that the blue staining occurs in the internal organs and in mucous membranes not exposed to the light, renders this improbable. The silver is deposited in the metallic state in the connective tissue of the skin, in the form of minute granules. The condition is a permanent one, and the "blue-men" retain their peculiar tint for life. No remedies have proven of any avail, except iodide of potassium—which, in the hands of L. P. Yandell, cured two cases when given in large doses?

Occasionally we see the skin permanently discolored by the process of tattooing. The practice is a common one amongst various savage tribes, and amongst sailors and navvies here. Pigment of various kinds—vermilion, charcoal (gunpowder), indigo, etc., is rubbed into the skin by means of close-set punctures. Persons are occasionally exhibited whose whole skin is covered with tracings made in this manner. The pigment granules are deposited deep in the skin, and the condition is a permanent one, though it fades slightly in the course of time. (See Fig. 44.)

NÆVUS PIGMENTOSUS.

Syn.—Nævus spilus; Nævus verrucosus; Nævus pilosus; Nævus materna; Nævus lipomatodes; Nævus molluscaformis; Nævus unius lateris; Pigmentary mole.

Definition.—A circumscribed deposit in the skin; of an excessive amount of pigment—perhaps combined with an hypertrophy of all of the cutaneous structures and especially of the connective tissue and the hair.

Symptoms.—The term nævus is not appropriate for these lesions; they are not connected with those vascular new growths to which the term is usually applied. They belong to the hypertrophies, and are related to lentigo and chloasma. However, when the pigment excess appears in connection with more or less hypertrophy of the other structure—connective tissue and hair—it is usually considered in the text book under the head of pigmentary nævus.

Pigmentary nævi are usually congenital, but may be acquired. Once formed, they show little tendency to change —save to increase slightly in size as time goes on. They appear as flat, slightly-raised, irregular tumors, of a color that varies from a light yellowish-brown almost to a chocolate black. They are usually round, and often resemble a coffee-grain very closely. In size they range from that of a split pea to several inches square. They usually occur upon the trunk, neck, and back, or on the face; but they may appear anywhere. There may be only one, or there may be many hundreds, of varying appearance, upon a single individual. When large they frequently assume curious shapes and appearances which are usually referred by the patient's friends to maternal "impressions"; for these, like the vascular nævi, are popularly supposed to be due to influences acting upon the pregnant woman.

If the surface of the pigmented papule is normal and smooth we have the nævus spilus; if it is rough and warty, we have the nævus verrucosus. If there is a growth of hair upon it we have the nævus pilosus; this hair is usually stiff but may be lanugo. If the connective tissue increase is very marked, as it sometimes is even to the extent of forming large sessile or pendant tumors, we have nævus lipomatodes. In this latter case, however, the growth is really not a nævus pigmentosus at all, but a connective tissue hypertrophy which is more or less pigmented.

In extensive cases these nævi seem, like the vesicles of zoster, to follow the nerve-tracts; they may be limited to one side of the body, or to one special region.

Pigmentary nævi occur with equal frequency in both sexes. In women they usually become of a darker tint during pregnancy.

Rindfleisch lays stress upon the danger of these growths forming the starting point for pigmentary sarcoma.

Anatomy.—The normal coloring matter of the skin consists of yellowish-brown granules which lie among the cells of the lower layer of the rete. They occur in greater or less

number in accordance with the race and tint of the individual. Even in the same person they occur in some places, as around the genitals, in comparatively greatly increased quantity.

A circumscribed and usually congenital increase in the number of these granules constitutes a pigmentary nævus. There is always some connective tissue hypertrophy, for without it the disease would be a simple discoloration—a lentigo. If the papillæ also are enlarged, we have nævus verrucosus ; if the hair-bulbs are increased in size and number, we have nævus pilosus.

Etiology.—The cause of these localized hypertrophies is unknown.

Prognosis.—Pigmentary nævi usually remain stationary for a lifetime, and do not show, like the vascular nævi, any tendency to retrogressive changes.

Treatment.—We are not often called upon to treat these growths, save when they cause disfigurement by appearing on the face, etc.

A 10 per cent. solution of corrosive sublimate applied for a few hours by means of a moist cloth will cause blistering and remove the pigment which does not usually reappear when the new epidermis is formed. The sore surface may be kept dusted for a few days with any ordinary powder. Tincture of iodine, caustic potassa, and ethylate of sodium work in the same way. Naphthol, tincture of green soap, pyrogallic acid, and chrysarobin all act as pigment destroyers.

Tattooing of these nævi has been tried, and Sherwell claims to have had good results from the use of a 25 per cent. solution of chromic, or a 50 per cent. solution of carbolic acid with his needles ; but it is impossible to imitate the natural color.

Nævus verrucosus and nævus lipomatodes are to be treated by thorough cauterization and excision.

Kaposi (Haut-Krankheiten, p. 528) gives *in extenso* a number of formulæ which he has found useful in the treatment of n. pigmentosus.

KERATOSES.

Keratoses are localized or general hypertrophies of the epidermic layer of the skin. The papillary layer is also affected in some cases; indeed, so far as we know, the epidermic cells derive their nourishment and their power of growth entirely from the looped vessels of the papillæ; but the numerical hypertrophy of the epithelia of the horny layer is the prominent pathological factor in the keratoses; and we may divide them into pure keratoses without papillary hypertrophy, and keratoses with papillary hypertrophy. To the first class belong callositas, clavus, cornu cutaneum, keratosis pilaris, psoriasis and lichen ruber; and to the second verruca and ichthyosis.

PURE KERATOSES.

CALLOSITAS.

Synonyms.—Callus; tyloma; tylosis; callosity.

Definition.—A more or less localized numerical hypertrophy of the cells of the horny layer of the epidermis; forming thickened patches of grayish or yellowish-brown, translucent skin upon various parts of the body, especially upon the hands and feet.

Symptoms.—Simple thickenings of the horny layer of the skin occur in patches of varying size and shape, but are not usually very extensive. They generally appear as semi-translucent yellowish gray or yellowish brown patches; they are thickest in the center, where they may attain a diameter of 4 to 5 mms., whilst they fade off into the normal epidermis at their periphery. They may be flat plates; or, if of larger extent, are moulded to conform to the shape of the surface that they cover. In callosities of moderate thickness, the lines and furrows of the skin are preserved; but in old and thick ones the surface is perfectly smooth.

The hypertrophy is usually artificial in origin, but it may also occur, though rarely, without any mechanical cause. Art-

ificial callosities are most often found upon the hands and feet, since there the causal agencies are most active. Upon the feet they are very common over the heel and on the ball of the great toe, sometimes covering the greater part of the sole with a thick yellow plate. They are also met with on the outer surface of the little toe, and over the instep.

The parts most frequently affected are the hands, and especially the palms. Various trades, professions, and amusements cause long continued pressure upon different parts of the hands and consequent callosities. Thus in carpenters they occur from the use of the plane in the cleft between the first finger and thumb of the right hand ; in tailors, from the use of the flat iron, upon the middle of the right palm, and upon the tips of the fingers from repeated needle-pricks ; among cobblers upon the inner surface of the fingers from pulling thread, and also upon the right knee from pounding leather, and upon the nates from sitting constantly upon wooden stools. Players upon the harp, violin, guitar, etc., have them upon the tips of the fingers ; oarsmen and base-ball players upon the palms, and especially at the roots of the fingers. Servants have them upon the hands from the hot water and alkalies used around the house ; mechanics and chemists from the use of acids, etc. They are occasionally seen among physicians who practice much immediate percussion upon the backs of the fingers.

In all these cases the thickening of the epidermis is, of course, a conservative process ; it protects the deeper and more important structures. But impressions are very much dulled by transmission through the mass, and movement is interfered with to such an extent as to prevent many of the more delicate uses of the hands. The thickened skin also is liable to crack, especially when it occurs around the joints, and to form painful and persistent fissures.

The callosities last as long as the cause which produced them remains active, and they disappear spontaneously in time, if that ceases. It is possible by their means not only to tell in many cases the occupation of a mechanic, but, what is sometimes more important, whether he has been working lately or

not. Occasionally, from the pressure of the callosity, conjoined with some accidental injury, inflammation of the subjacent corium occurs, pus is formed under the horny plate, and it is thus detached and cast off.

Idiopathic callosities are rarely seen ; but we do meet with them occasionally upon the palms of the hands and the backs of the fingers in persons whose occupation affords no explanation of their occurrence.

Anatomy.—The callus is simply the accumulation in abnormal numbers of the layers of epithelial cells of the epidermis. The amount of pressure, of wear and tear, regulates generally the thickness of these layers. But when the skin is subjected to more than the ordinary pressure, and especially when it is subjected to it at a place where counterpressure by some bony prominence is active, there the hypertrophy sets in. It is a purely conservative effect on the part of nature to protect the deeper structures. The corium is not involved to any extent ; yet the excessive cell growth must derive its basis from the vessels of the true skin.

On section, we find the corium normal, the epidermis thickened, and the upper layers of cells so closely packed as to resemble bone substance.

Etiology.—This is sufficiently dwelt upon in the Semiology and Anatomy.

Diagnosis.—This is usually easy ; the callus is generally smooth, it fades away at its margins into the healthy skin, and it finds an explanation in the occupation or habits of the patient. But upon the palms and soles it is very liable to be fissured, and then it presents no small likeness to eczema, or even to psoriasis, syphilis, ichthyosis, etc. Its strict limitation will be of use, of course, in the differentiation of callus from all these ; but the reader is referred to the various diseases for the points of differential diagnosis.

Prognosis.—The callosity will last as long as the cause that produces it remains active ; it will disappear of itself when that cause is removed. It may be cast off by suppuration.

Treatment.—In a large number of cases the callosity is pro-

tective, and ought not to be removed so long as the cause cannot be avoided ; and even if it is removed it will return unless that be done. Various agents may be employed to soften the horny mass. Hot baths, poultices, enveloping the part in rubber, the use of soft soap as ointment, alkalies such as caustic potash (to be cautiously used in 1 to 2 per cent. solution, since its action is liable to reach down to the true skin), acid, such as vinegar or acetic acid, mercurial plaster, etc., may be used. Any of these will soften the callosity and permit its removal by scraping with scissors and knife.

To prevent its return, if removal of the cause is not possible, the spot may be protected by anything that will relieve the pressure—gloves, rings of leather or rubber, cotton, etc., etc.

CLAVUS.

Synonym, Corn.

Definition.—Clavus is a small, strictly localized, numerical hypertrophy of the horny layer of the epidermis, painful upon pressure, and usually situated about the toes.

Symptoms.—Corns occur as circumscribed horny masses, usually not larger than a split pea, and smooth and shining upon the surface. They are, in fact, callosities ; but they differ from the formations described under that head in the fact that they are small in extent, and that instead of lying like flat plates upon the corium, they are cone-shaped, and their apices dip down into the true skin. The latter characteristic gives the corn the name of clavus, meaning a nail.

Corns occur almost invariably upon the feet, and most commonly upon the outer surface of the little toe. They are also seen upon the upper or under surfaces of the other toes, or upon the soles of the feet. They are not much elevated above the surface ; they are smooth ; and they are often very painful upon pressure, the deep core impinging upon the sensitive skin in which it lies. When corns occur between the toes the constant maceration causes them to become soft and spongy ; hence they are called soft, in contradistinction to the ordinary or hard corns.

In the slight form, corns are an affection of little consequence; but in severe cases they may prevent walking entirely.

Anatomy.—Clavus is in reality only a very strictly localized callosity. It is in the same way a hypertrophy of the horny layer of the skin—but not evenly spread over the corium. It consists of a horn-like mass in the shape of an inverted cone, with its base level or nearly level with the surface, and its tapering apex down in the rete. The cone is composed of concentric layers of closely packed epidermic cells.

More or less hypertrophy of the papillæ at the circumference of the corn is to be observed; but where the core dips down the papillæ are atrophied and may have disappeared; or even the whole corium may be perforated by the pressure of the "nail."

Though at first the corn is an attempt toward the protection of parts subjected to direct and very localized pressure, and counter-pressure, there is soon set up, as Lesser points out, a circulus vitiosus. The more the epidermis thickens, the greater the pressure; and the more the pressure increases, the greater will be the thickening of the horny layer.

Etiology.—Long continued pressure and counter-pressure is the cause of clavus. In the feet—the portion of the body most neglected and most imposed upon by the dictates of fashion—this cause is most active. Almost all corns occur upon the feet, and are due to shoes improper in size or shape.

Prognosis.—If the cause is removed the cure of clavus is usually easy; without that, it may be mitigated but not removed.

Treatment.—Is very much the same as that for callositas. The prime requisite is the removal of the cause. A rational covering for the feet, which conforms in some measure to their natural shape, must be insisted upon. Besides this, the corns may be relieved from pressure in various ways; rings of rubber, of plaster, of wadding, felt, etc., may be used. Not only will the pain be relieved, but the constant tendency to increased growth will be obviated.

Any of the means mentioned in the previous section may be used to soften the corn and permit its extraction. Continuous soaking in warm water, or poulticing, will accomplish this perfectly well. The poultices are to be put on for several nights in succession. Resin, pitch, galbanum or diachylon plasters may be employed. Salicylic acid in solution sometimes acts promptly. Gezou's remedy for corns and warts is prepared as follows : acid salicylic, grs. xxx. ; ext. cannabis indic. grs. x. ; collodion, ʒ iv. This is to be applied twice a day with a brush. The results are said to be gratifying.

After softening, and at once in soft corns, their removal may be affected by digging out the mass with the knife-point or curette ; or nitrate of silver in the solid stick, or caustic potash (ʒ ss, to ʒ i to ℥ i of alcohol) may be cautiously used.

It is to be borne in mind that small bursæ mucosæ are common at the seats of election of clavus, and that there is a possibility of serious results if they are opened.

CORNU CUTANEUM.

Synonymes.—Cornu humanun ; cutaneous horn; horny excrescence, horny tumor.

Definition.—A circumscribed hypertrophy of the epidermic layer of the skin, forming a horny outgrowth of variable size and shape.

Symptoms.—Horns growing from the skin are occasionally observed, bearing the greatest resemblance in appearance to the horns of the lower animals. They form one of the rarest of the anomalies of the skin, since Hebra with all his experience, had in 1876 seen but three of them.

These horny outgrowths are of various sizes and shapes. Usually they are more or less tapering ; they may be straight, or curved in various directions like a ram's horn ; their ends may be clubbed or broken ; their surface is more or less irregular and fissured. In color they are usually of a grayish-yellow tint ; but they may be brownish, or even blackish, es-

pecially if they are old. They are usually small in size, and are generally short; though Kaposi mentions one that was twenty-five centimetres long, and Porcher has reported the case of a negress from whose forehead sprang a horn seven inches long, and two and three-quarter inches in diameter. Their width at the base, their thickest part, does not usually exceed half an inch at the most; and from that on they taper to the end.

These horns rest upon a broad, flattened, or concave base, which lies directly upon the skin. The tissues upon which they rest may be normal; but very often there is more or less hypertrophy of the papillæ; in fact, some observers have found groups of greatly enlarged papillæ running up some distance in the center of the horny mass.

Cutaneous horns have been seen on all parts of the body, but most frequently occur about the head, and next oftenest upon the male genitals. The skin of the nose, ears, eyelids, lips, cheeks and scalp may all afford a seat for the growth. Dr. Gottheil saw lately in a woman at sixty-five, one horn about five-eighths of an inch long which grew from the center of the right eyebrow, whilst another one-quarter of an inch long was upon the right cheek, just below the middle of the lower lid. They may be single, but are very often multiple. Thus Boettge describes a case where a man of sixty had six horns upon his face, and another in which a young girl had the entire lower half of her body studded with them, there being one six inches long upon one labium. They commonly occur in elderly people, though Lesser has seen two horns upon the lower lip of a girl twenty years old. Around the genitals they sometimes begin as what are called venereal warts. Pick has collected nine cases of horns of the penis, in some of which the sulcus below the glans was entirely occupied by small horns, which had begun in this way. Cutaneous horns are dry and somewhat brittle; they are not as hard as the nail-substance is. After having attained a certain size they tend to break off, but they always grow again. They are not painful, save when injured or irritated; in which latter case inflammation of the base of the growth

may cause it to be cast off. They have been noticed among the lower animals.

Anatomy.—Essentially these cutaneous horns are hypertrophic warts, and it is the peculiarity of their appearance alone which entitles them to separate consideration here.

They consist of accumulations of epidermic cells closely agglutinated. They originate always from the stratum mucosum, either that lying over the papillæ of the corium, or that lining the gandular structures. As a usual thing a number of hypertrophic papillæ form the core of the horn, and above them the horny cells are ranged in columnar order. Sections low down will strike the papillæ and bloodvessels, surrounded by the columns; sections higher up will show the columns of dry cells alone. In the columns themselves the cells are often arranged in concentric rings. Even if the base of the column be sunk into the skin, the hypertrophic papillæ in whose growth the horn originated will be found there. According to Rindfleisch, even those horns which apparently originated in a glandular structure, have a papillary outgrowth for a beginning, though the gland epithelium may have participated in the epithelial proliferation.

In a number of cases epitheliomatous degeneration of these growths has been reported.

Etiology is obscure; the cause of this rare affection is not known.

Prognosis.—Cutaneous horns usually grow very slowly. In some of Pick's cases, however, they grew at the rate of more than two inches in six months. When simply broken or cut off they almost invariably reappear. There is no pain, save when they are injured. Their liability to epithelioma in the old people in whom they usually occur, is an argument as powerful as their unsightliness for their destruction.

Treatment.—Both the horn and its base must be destroyed. The growth may be cut or broken off, and the base excised, or cauterized with the galvano-cautery, or with chloride of zinc paste, caustic potash, etc.

KERATOSIS PILARIS.

Synonyms.—Lichen pilaris ; pityriasis pilaris.

Definition.—Keratosis pilaris depends upon a localized hypertrophy of the horny cells of the epidermis around the orifices of the hair follicles, and appears as scattered, pin-head sized, conical elevations, each usually pierced in the center by a hair.

Symptoms.—The disease appears as a number of grayish or whitish elevations of pin-head size scattered over the skin, the surface of which is rough, dry and harsh. In bad cases the epidermis feels like a nutmeg-grater.

Each little papule is due to a localized overgrowth of the epithelia and accumulation of sebaceous matter around the orifice of a hair follicle ; the hair itself usually protrudes through the lamina heaped up around its base. In some cases the hairs are imprisoned, and are found coiled up within the epithelial mass ; or they may be broken off short at the apex of the whitish papule giving it the appearance of having a dark center.

Keratosis pilaris occurs to a slight extent upon every one, especially upon the arms. Its favorite seat is upon the extensor surfaces of the limbs, and especially upon the thighs ; but it may occur everywhere upon the body. It usually develops at puberty when the lanugo begins to grow with increased vigor, and once formed tends to last indefinitely. It is easy to understand why it is more common in those who do not bathe often.

Anatomy.—Lichen pilaris is a simple accumulation of epithelial cells and sebum around the orifices of the hair follicles ; sometimes imprisoning in its mass the hair itself.

Etiology.—Probably the omission of the frequent use of hot water and soap has as much to do with its occurrence as any thing. The fact also that the cells lining the hair follicles and sebaceous glands partake of the increased activity manifested by the various structures of the skin at puberty may help to cause the affection.

Diagnosis.—Cutis anserina is due to a temporary erection of

the hairs under the influence of cold or heat or nervous excitement ; keratosis pilaris is permanent.

Lichen pilaris resembles a good deal a desquamating miliary papular syphiloderm, but differs from it in not being grouped, and in being less deeply seated, less scaly, and not red in color. In lichen scrofulosus the lesions are somewhat larger, tend to occur in groups, and appear especially upon the abdomen.

Prognosis.—The trouble lasts indefinitely if uninterfered with, but is quite amenable to treatment.

Treatment.—Hot baths, with strong alkaline soaps, such as sapo viridis, must be employed. The various emollient ointments, glycerine, etc., are also useful.

PSORIASIS.

Syn.—Lepra ; psora ; lepra Willani.

Definition.—A chronic affection of the skin characterized by the formation of patches of variable size and shape, formed of slightly adherent lamellæ of whitish, mother-of-pearl like epithelial scales situated upon a thickened, reddened and easily bleeding base.

Symptoms.—Psoriasis always commences as small, pin-head sized, brownish or pale red, elevated spots, upon which, in a day or two, bright scales formed of epidermic cells commence to collect. These spots or papules are rarely ever present singly, a number generally making their appearance at the same time. The papules increase in size by peripheral growth, sometimes quickly, sometimes slowly, and may spread so as to cover a considerable area. As the eruption always spreads by peripheral growth, the patches resulting from extension of individual papules will always be more or less circular in form. When a patch has reached the diameter of about an inch, more or less, it frequently shows a tendency to clear up in the center by a diminution in the elevation and in the amount of scaling, at the same time that the eruption continues to spread at the periphery. In this manner the patch assumes a ring form and in its subsequent growth this form remains, as the healing process extends

from the center in direct ratio to the extent of peripheral growth of the eruption. All patches, however, even among those which acquire a considerable size, do not take on this ring form, but form areas of variable size, covered everywhere by a large number of whitish epithelial scales. The size also attained by individual papules varies greatly ; some remain pin-head in size, while others spread to form a patch of perhaps several inches in diameter ; and between these are all gradations of size. No matter whether large or small, they all possess the same characters. They are elevated, with a reddish base, and covered by lamellæ of epithelial cells, which are but slightly adherent to the underlying rete. Upon removal of the scales, slight scratching of the part will cause oozing of blood from the papillæ beneath. This oozing is rather characteristic of an active psoriasis ; in the stage of disappearance the difficulty of producing it is in direct proportion to the extent of progress in the healing process.

On account of the differences in the size and shape of the patches present in psoriasis, special names have been employed to represent the different forms ; thus, when the spots are about the size of a pin-head or less, it is called psoriasis punctata ; if of the size of a split pea, psoriasis guttata ; if as large as a twenty-five cent piece and with the center still scaly, psoriasis nummularis ; or if a large extent of surface is affected, psoriasis diffusa. If the patches heal in the center, giving the eruption a ring form it is called psoriasis circinata or orbicularis, and if neighboring rings coalesce and form bands, the intervening skin becoming normal, it is called psoriasis gyrata. All the forms of eruption must commence as psoriasis punctata. In that new spots of eruption are constantly arising and afterward spreading by peripheral growth to assume one or other of the above forms, we find in nearly every case of psoriasis of some duration all the different forms described present. The eruption which at first was isolated becomes, by the formation of new papules and peripheral spreading of the patches, more or less confluent, so that finally larger or smaller areas or a large portion of the cutaneous sur-

face may be occupied by it. As already stated, soon after the appearance of the eruption as a small, reddish, papular elevation, whitish scales begin to appear on the summit of the papulæ, and increase in quantity as long as the disease is actively increasing in extent. The amount of scaling varies in different persons, in the different patches of the eruption in the same person, and in an individual patch, according to the duration of existence and to the condition of the eruption. More scales are present when the disease has lasted some time and is still in an active condition, than at the commencement of the eruption, or during the period of disappearance. The amount of scaling is less when the nutrition of the skin is interfered with, either from general mal-nutrition or from an acute febrile disease. Generally fewer scales are formed on females than on males, and on patches situated on the flexor surfaces of the body, than on the extensor surfaces. Generally fewer scales are present in very young persons than in adults. In short, where the epidermis is thin, the scales are less in quantity than where this layer is strongly developed. The whitish appearance of the scales is due to the presence of air in the spaces between the shriveled and dried-up epithelial cells. Psoriasis may continue to exist on the skin for years, either by continuation of the pathological process in already existing patches, or by the formation of new spots of eruption in addition to those already existing; or the older spots may disappear and the eruption be prolonged by the constant formation of new patches. Patches sometimes exist for years without showing any increase in size, the disease remaining confined to the original seat. The whole eruption, however, is liable to temporarily disappear spontaneously from the body by a process of involution. The first symptoms of involution are as follows: The scales are no longer so adherent or formed as rapidly as before; they are easily removed or fall off spontaneously, leaving a slightly reddened spot behind. These spots gradually lose their color; sink to the level of the skin, do not show oozing of blood upon scratching, are covered with fewer and fewer scales, until finally the skin resumes its normal

appearance, with the exception of temporary pigmentation. This process of involution may occur in all the patches or psoriasis at the same time or only in some patches, while others continue to increase in size or new ones to develop. In uncomplicated cases there is never any vesiculation, pustulation or discharge of any kind to be observed. In some cases, especially when the eruption spreads rapidly there may be considerable inflammation, with burning, itching, etc., present, but usually the redness at the seat of the patches is due to hyperæmia only, or if inflammation is present, it is secondary to the nutrition change occurring in the epidermis. When a patch has existed for some time there is, owing to this secondary inflammatory condition, more or less infiltration of the skin and diminution in the elasticity of the part. On account of this thickening and loss of elasticity, the surface of the affected part may become cracked and fissured, and an eczematous condition be produced. The part may also present more of the characters of a chronic eczema than of a psoriasis when the secondary inflammatory process, which is always present, becomes the principal pathological condition. The favorite seats for the development of psoriasis are the elbows and knees, but it may appear upon any part of the cutaneous surface. It never appears on a mucous membrane. It is very rarely present upon the palms of the hands or upon the soles of the feet. The nails of the fingers and toes are frequently affected. They become thicker, uneven, ridged, dark-colored and friable, the free ends breaking off easily. It is rare for all of the nails to be affected at the same time. The hair, even in psoriasis of the scalp is rarely affected in its nutrition.

Anatomy.—Psoriasis consists in a hyperplasia of the rete and corresponding structure of the hair follicles. Examining a section from psoriasis punctata of a few days duration, the corneous layer is found to be but slightly changed, while the rete shows marked hyperplasia.

While the normal Malpighian layer on both sides of the section in Fig. 45 shows an almost level under surface, *i. e.*, the papillæ are but very slightly developed, that portion of the layer

occupying the center of the section, and corresponding to the region of the papule, presents more or less deep and broad prolongations downward into the cutis. These prolongations are larger in the central part of the papule than at its margin. As a consequence of this growth downward of the interpapillary portion of the Malpighian layer, there is a larger papillary space in this region than exists in the normal tissue. This growth inward of a conically-shaped structure, having the apex of the cone downward, produces in proportion to the length of the cones a corresponding increase in the length of the space separating them. This prolongation downward being greater at the

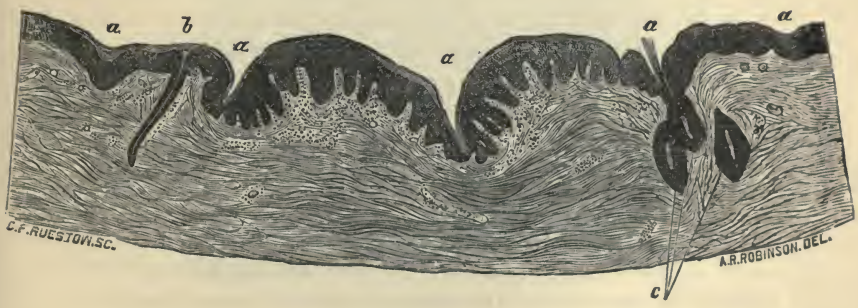


FIG. 45.—Section of a pin-head size papule of psoriasis, drawn with a low magnifying power. Healthy tissue is present on both sides of the section, externally from *b* on the left side and from *c* on the right side. *a*, orifices of hair follicles; *b*, orifice of sweat duct; *c*, hair follicles cut obliquely.

center of a young papule than at the margin, on account of the greater age of the former structure, the long axis of the inter-Malpighian space in the former is greater than in the latter.

In the papillæ and superficial part of the corium within the psoriasis region, there are seen enlarged bloodvessles and round bodies in varying numbers in the surrounding tissues, while in the non-papular region no enlargement of bloodvessels is, as a rule, observed, and also no white blood corpuscles.

The deeper parts of the cutis appear normal, as well as the sebaceous and sweat glands.

The increase in the size of the Malphigian layer arises from

an increase in the number of rete cells. This increase is sometimes very great.

In Fig. 46 I have drawn the appearances presented near the center of the papule a few days old. It will be seen by reference to that figure that there is a great increase in the size of the

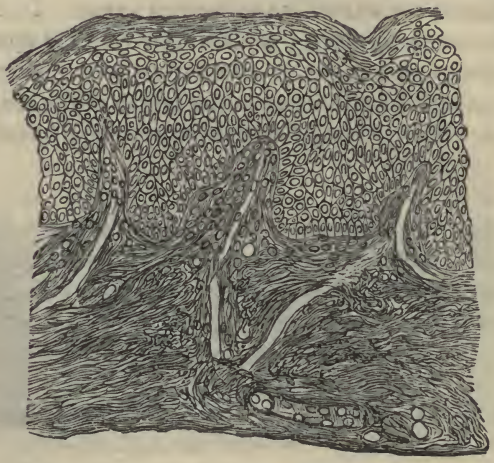


FIG. 46.—Section of the center of a psoriasis papule of a few days duration.

Malpighian layer throughout its whole extent, and especially in its interpapillary portion. In order to have a correct idea of the amount of increase of this layer in a papule not larger than a pin's head, I have represented, in Fig. 47, surrounding normal

FIG. 47.—Section of normal skin from the periphery of the papule represented in fig. 46.

tissue, which was removed along with the papule from which the section represented by Fig. 46 was made. Both figures are magnified the same number of diameters.

The bloodvessels in the papillæ are more or less dilated, this dilatation, together with emigration of white blood corpuscles, increasing with the duration of the eruption. All the inflammatory changes, however, in the cutis are secondary to the hyperplasia of the rete.

The longer the acute process lasts the greater is the amount of hyperplasia of the rete, and also of inflammatory changes in the corium. In chronic cases there may be considerable infiltration of the cutis with round cells, while the bloodvessels are

FIG. 48 shows how the bloodvessels may be dilated in psoriasis. The corneous layer has been accidentally removed.

dilated and the papillæ increased in length from the growth of the rete downward. In fig. 49 are represented the changes occurring when the eruption has lasted some time.

The hair in psoriasis becomes changed at the commencement. The external root-sheath, the structure corresponding to the rete, becomes increased in size in the same manner as the latter structure. There is a real hyperplasia, with an extension of the hyperplastic structure into the surrounding cutis. This growth occurs principally at the root of the hair, though it is met with also along the rest of the follicle. In Fig. 50 is represented a hair follicle which was present in the papule from which Fig. 45 was drawn. Every hair situated within a

psoriasis papule has this hyperplasia of its external root sheath.

In all the other forms of eruption in psoriasis, we have only to do with differences of degree in the pathological process,

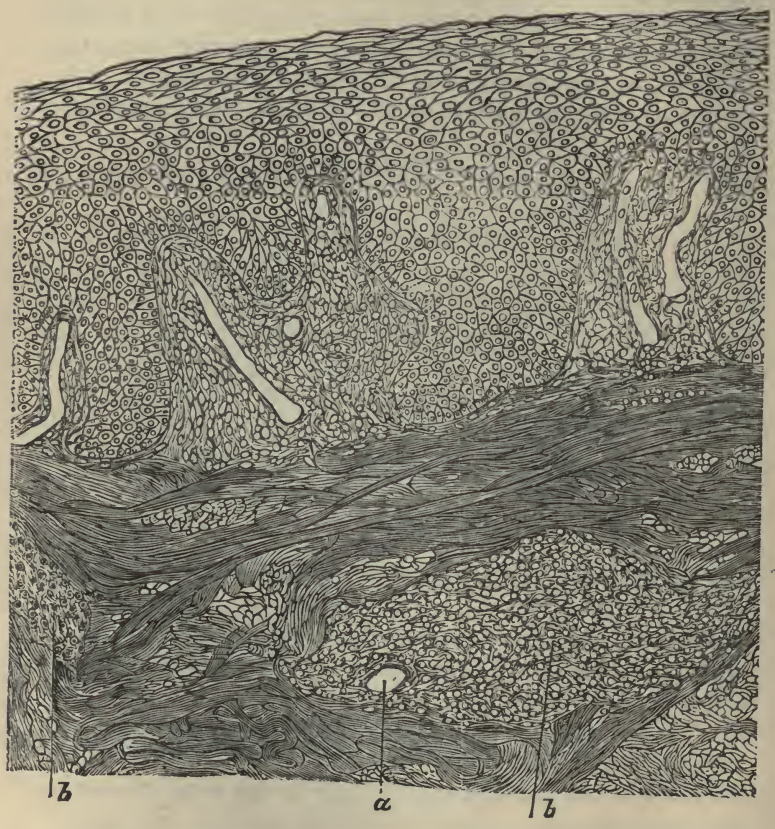


FIG. 49.—Section of patch of psoriasis nummularis. The hyperplasia of the rete is marked. a, Dilated bloodvessel ; b, peri-vascular cell infiltration.

the nature of the disease remaining the same as in psoriasis punctata. In psoriasis guttata, psoriasis nummularis, and psoriasis diffusa, the process has simply extended over a larger

area of skin, and as a consequence ; the process of hyperplasia being the essential process in the production of the increase in size, we can expect to find but little, if any, changes in the Malpighian layer in the later stages of the eruption different from those observed in the papular stage, except in the extent of the hyperplasia, and the consequent increased thickness of the rete Malpighii. As regards those secondary processes which showed marked differences in different papules in the early period of the eruption, they will naturally show differences in the other forms, and consequently there will be observed in different patches differences in the amount of dilatation of the bloodvessels, in the amount of œdema in the surrounding tissue from transudation of serum, and in the number of emigrated white blood corpuscles.

FIG. 50.

During the period of disappearance of the disease there is a gradual return to the normal condition, until the hyperplasia, dilatation of the bloodvessels, and cell infiltration has completely disappeared. The Malpighian prolongations become smaller and smaller until the layer attains its normal size ; the bloodvessels gradually return to their normal diameter, and the round cells and serous exudation return to their normal channels. Of these pathological processes, the cell infiltration and œdema generally disappear first, and the hyperplasia last.

Etiology.—In many cases of psoriasis the cause of the disease is unknown. In the majority, however, it will be found that there is an hereditary predisposition to the disease, that one or other of the parents, grandparents or relatives have had the eruption. It is unusual for all the members of a family to have the predisposition to the disease, although in a family under my care four of the five children besides the father had psoriasis. It occurs equally in chlorotic, tuberculous, and well-nour-

ished healthy persons. It is somewhat more frequent in males than females. The seasons exert but little influence in its development, the majority of cases probably are worse in winter and better in summer, but the reverse is often observed. It frequently disappears if the system becomes much weakened from other diseases, especially acute conditions. External irritation, as scratching, can call into action the hyperplastic process, provided there is a predisposition in the skin to the disease. For the same reasons it has been observed to follow vaccination. In these cases, if the person has not previously had the eruption they would have acquired it later. It generally makes its first appearance between the period of puberty and twenty or twenty-five years of age. It has been observed in a child eight months old (Kaposi), and again it may not appear until late in life.

Diagnosis.—Psoriasis may be confounded with eczema squamosum, seborrhœa, tinea trichophytina, pityriasis rubra, lupus erythematosus, lichen ruber and the papulo-squamous syphilide.

In eczema the scales are fewer; are not so bright, mother-of-pearl-like; consist of epithelium and dried exudation and not of dry epithelial cells alone as in psoriasis; are not situated upon a raised base, and scratching of the part after their removal is not followed by oozing of blood. In psoriasis the patches are always well-defined and dry, and there is no history of vesicles or moisture having been present at any time in the course of the eruption; in eczema the patch is rarely sharply limited, there are generally vesicles or isolated inflammatory papules at the periphery, and if the patch is dry at the time of observation there is always a history of a previous moist stage to be obtained. A patch of eczema is generally more infiltrated and has more scales at the center than at the peripheral part; in psoriasis the scaling and elevation is greatest at the periphery. Psoriasis is generally present on the outer surfaces of the elbows and knees, while eczema is rare on those situations. Itching is generally present in both diseases, but is almost invariably much greater in eczema. In gouty and rheu-

matic subjects circular patches of eczema situated on the lower extremities especially, bear very frequently a close resemblance to psoriasis, both as regards the amount of scaling and the sharp limitation of the patch. The history of the case, the non-lamellar character of the scales, and the absence of psoriasis on other parts, are the points of reliance in the diagnosis. If psoriasis becomes complicated by eczema then the primary disease may not be recognizable.

Seborrhœa resembles psoriasis only when seated upon the scalp. Seborrhœa never appears as circular patches or rings, the scalp is almost always pale, occasionally slightly hyperæmic, but not elevated; the secretion consists of thick, friable crusts, or fine, grayish or yellowish greasy scales; while psoriasis appears as circular patches or rings composed of dry epidermic non-greasy scales situated upon a red, elevated base. Psoriasis also generally extends a distance on the forehead or neck as bands of characteristic appearance, while seborrhæa remains confined to the scalp.

In ringworm of the scalp the patches bear some resemblance to psoriasis, but the amount of scaling is much less and the scales are finer. In ringworm the hairs are always affected; in psoriasis they are normal. Psoriasis of the scalp never exists alone, ringworm often does. In cases of doubt examination by the microscope will decide the question, as fungi are never present in psoriasis. In ringworm of the body, the small amount of scaling, the presence of vesicles at the periphery, the want of symmetry, psoriasis being generally a symmetrical affection, and the absence of the eruption on the knees and elbows are sufficient to make the diagnosis easy.

In pityriasis rubra the eruption is general over the whole body, the scales are either fine or very large and thin; they do not accumulate, but are being constantly exfoliated; there are no papules, the skin is not infiltrated and removal of the scales shows a red, tender, non-elevated skin beneath.

In erythematous lupus, the eruption is generally situated upon the cheeks or nose, the patch spreads very slowly, the scales are few but firmly adherent, and upon removal show attached

to their under-surface plugs of sebaceous matter extracted from the dilated sebaceous gland-ducts. Lupus always causes destruction of tissue with subsequent formation of cicatricial tissue; psoriasis never destroys tissue, but when it disappears it leaves normal tissue behind.

In lichen ruber the papules are all about the same size, they do not increase by peripheral growth and have a tendency to invade the whole body. At first the scaling is slight, but if a diffuse patch is formed from the constant production of new papules between existing ones, then the scaling and dryness of the patch may resemble the eruption in psoriasis. At the periphery of such a patch, however, characteristic papules of lichen ruber are always present.

In the papulo-squamous syphilide the papules are not so symmetrically arranged as in psoriasis ; they are more frequently confined to a part of the body, while psoriasis attacks several regions, the papules are darker in color and covered with fewer scales. The scales are also very firmly adherent, and upon their removal scratching of the base does not produce oozing. There is more infiltration than in psoriasis, and the knees and the elbows are seldom attacked. In cases of syphilis other forms of the disease are generally present, as the eruption rarely maintains for any length of time a single form of lesion. The history of the eruption will also aid greatly in forming a diagnosis.

Prognosis—The prognosis in psoriasis is favorable as regards the removal of the existing eruption, but we are unable to prevent a return of the disease. Outbreaks of the eruption may occur even during treatment, or relapses may take place within a few weeks or months ; rarely does it remain absent a number of years ; consequently we can never promise the patients that they will not have a return of the disease, nor can we tell how soon a relapse will occur.

Treatment.—The treatment is either *internal* or *local.*

Internal treatment consists in the administration of arsenic for its special effect on psoriasis and alkalies against hyperacidity of the system. Although alkalies are not sufficient of

themselves to remove the eruption, yet, in the majority of cases, arsenic will be found to act much more rapidly and effectually when given in combination with alkalies than when administered alone. The amount to be given depends upon the general condition of the person ; the urine must be kept alkaline ; plethoric, gouty and rheumatic persons require larger doses than other persons. They should be given after meals and in large quantities of water. The liquor potassæ, citrate of potash, acetate of potash or bicarbonate of soda may be given, but I prefer the acetate of potash on account of its diuretic effects also. In gouty and rheumatic subjects colchicum should be added. I use the following for gouty or plethoric subjects, if there are considerable urates present in the urine : ℞. Potass. acet., ℥ i. ; spirits eth. nit., ʒ iv. ; vin. colchici, ʒ ii.; syr. aurantii ℥ iss. ; aq. carui, ad. ℥ vi.; M. Sig. A desert-spoonful three times a day after meals in a wineglassful of water.

Fowler's solution of arsenic is to be added to this in the strength suitable for each case. The bowels should be kept regular by saline cathartics ; dyspepsia if present, must receive careful attention. An acid dyspepsia keeps the system in a condition most unfavorable for the cure of a psoriasis of any extent. The diet should be regulated, food should be nourishing and easily digestible. Acid substances, fat and malt liquors should be avoided. Meat should be partaken of somewhat sparingly, and only beef, lamb or mutton, or poultry eaten. The meat should be prepared in the most digestible form. By attention to the foregoing we can, by the use of arsenic, cause the majority of cases of psoriasis eruption to disappear in a few weeks, even if it be very extensive.

The guttate form is the easiest cured. The diffuse psoriasis is much more obstinate. Arsenic may be given in the form of arsenious acid, Fowler's or Pearson's solution. The dose is to be regulated partly by the manner in which it is borne. One should commence with small doses, and every two or three days increase the arsenic, if the stomach will stand it, until a fair dose is taken. Children can take comparatively large

doses without causing intestinal disturbance. As a rule it should be given after meals, although some prefer to take it upon an empty stomach. After a maximum dose has been reached in an individual case, this quantity should be given until the eruption has subsided, when small doses should be given for some time longer. Sour stomachs generally cannot bear the smallest doses of arsenic. In these cases we must depend on local treatment alone.

Arsenious acid is given in pill form, combined with black pepper to form the so-called Asiatic pills, their formula: Acid arsenicosi, 4,00; piperis nigri pulv., 35,00; gum arabic, 7,50; aq. dest., q. s.; ft., in pill., No. 800. One pill should be taken three times a day at first, and gradually increased until, perhaps, four pills are taken three times a day. Their use is to be continued in the manner already described for arsenic. If they cause griping or diarrhœa, small doses of opium should be taken also. If Fowler's solution is used, the commencing dose should be for an adult, three or four drops after meals, three times a day, and this dose gradually increased and continued in the manner above described.

If the stomach does not bear the larger doses we must be content with smaller ones, or try one of the other preparations.

Pearson's solution is to be given in the same manner as Fowler's, as a rule it is not better borne by the stomach than the potash combination. Cases of general psoriasis and of p. guttata, and of p. punctata may be treated by arsenic alone; but in the other forms, and in inveterate psoriasis it is necessary to combine local treatment with it.

Other substances have been recommended for the cure of psoriasis. Tr. cantharides, colchicum, jaborandi, have all been recommended, but are very uncertain in their action.

Oil of cade, twenty drops mixed with syrup, or in capsules, and carbolic acid in pill are sometimes useful in the early stage of the eruption. On account of their action, however, on the epithelium of the liver and kidneys they must be used with caution.

Local treatment consists in the use of water, soap, tar, sul-

phur, mercurial preparations, and chrysarobin, and pyrogallic acid.

Water may be used in the form of warm or cold baths, or steam, or douche baths, or wet-packs.

The long continued use of water in one of these forms will finally cause maceration of the scales, disappearance of the infiltration and removal of the psoriasis eruption. It is to be recommended only in chronic and obstinate or diffuse eruptions.

The use of soap, either alone or dissolved in alcohol, will, if energetically applied, cause the eruption to disappear. It may, be used in cases of diffuse psoriasis and where there is considerable infiltration. Green soap is the best preparation.

If the eruption is very extensive the treatment should be conducted in the following manner:

The soap is to be thoroughly rubbed into the skin and allowed to remain. The rubbing is to be repeated twice a day for four or six days, then for three or four days, once a day, and then nothing is applied for four days when a bath is to be ordered. The bath is taken only after the epidermis has begun to loosen itself; if taken too soon, retention and shrinkage will be so great as to interfere with movements of the body. If the eruption consists only of limited deeply infiltrated chronic patches, the soap will act better by spreading it as thick as an ointment upon a piece of flannel, and binding it upon the part. Soap dissolved in alcohol is a useful form for psoriasis of the scalp. It may be applied by means of a flannel as above described, or with a stiff brush, using at the same time warm water douche.

Oleum rusci; oleum cadini, or common tar may be used. This can be used either in the form of solution or in combination with soap or ointments. As an ointment one to two drachms of tar to an ounce of lard, or in solution in the strength of one to eight drachms of tar to an ounce of alcohol, or as a soap in the proportion of one part of green soap to two of tar and three of lard can be used.

The tar preparations should be well rubbed into the skin either with a flannel or stiff brush. They should be applied

once or twice a day. If a large surface is affected the patient should lie between woolen blankets or wear woolen undergarments for at least two hours after the application, until the tar has become sufficiently dry. The scales should be removed before each application of the tar, by baths and soap.

Tar, by means of a bath, acts more energetically than by means of an ointment. The mode of procedure is as follows: the patches of psoriasis are first washed with soap, and then one of the tar applications energetically rubbed in and the patient immediately put in a bath, to remain there four to six hours, then washed off, dried and rubbed with fat or simple ointment. This bathing is to be repeated until the eruption has disappeared.

Occasionally tar gives rise to unfavorable symptoms either local or general. Sometimes it produces inflammation of the skin, especially where two surfaces come in contact. This can be prevented by the use of powder and charpie.

Occasionally it causes inflammation of the sebaceous glands, producing an acne, especially on the extensor surface of the lower extremities and on hairy parts of the body. If they appear the use of tar must be discontinued.

In some cases even after the first application of tar, symptoms of general disturbance—intoxication symptoms—from absorption of the tar occur. Among the symptoms are to be noted fever, coated tongue, nausea, eructations, vomiting of dark tar-containing fluid, diarrhœa, dark colored fæces, ischuria, strangury, dark colored, tar-containing urine. If the use of the tar ceases the symptoms gradually subside and finally disappear without evil consequences. As the susceptibility of different persons is different in respect to the effects of tar the first few applications to the skin should be limited in extent; afterward larger surfaces may be tarred.

Sulphur may be used as ordinary sulphur baths or as artificial baths prepared with Vleminckx's solution; it is applied in the same manner as the tar preparation. The patient being first washed with soap in a bath and the solution applied with a brush he is allowed to remain several hours, or the patient re-

mains in the bath one hour after the application and is afterward washed with luke warm water, and rubbed with lard or oil. It can only be applied on small regions at a time, and should not be used when the skin is tender, or upon the face.

Wilkinson's ointment, as modified by Hebra, is also useful. ℞. Sulphuris sublim., ol. cadini, āā, ʒ iv.; saponis viridis, adipis, āā, ℥ i., pulv. cret. alb. ʒ iiss. M.

The salve is to be applied twice daily for six days without a bath ; only after the epidermis has loosened, which occurs about the tenth or twelfth day, is a bath to be ordered.

The energetic modes of treatment are only necessary in cases of chronic, inveterate, infiltrated patches.

Some of the mercurial preparations are of advantage in some of the forms of psoriasis, the ointment of the nitrate of mercury, full strength or weaker, or an ointment of the biniodide ten to thirty grains to the ounce, or the Ung. Rochardi (Iodi. puri gr. i., calomel ☽ i., ung. rosæ. ℥ ii.) may be used if the patches are small and few in number. The oleate of mercury in the strength of from two to ten per cent., is also of service in small patches with considerable infiltration of the corium. These mercurial preparations cannot be used over large surfaces on account of the danger from absorption ; they are especially serviceable for small patches situated upon the face.

All of the above mentioned preparations for local treatment are as a rule of much less value than that of chrysarobin, which was first introduced to the profession for the treatment of psoriasis by Balmano Squire of London. It was formerly called chrysophanic acid, and is used either in the form of an ointment mixed with lard or vaseline in the proportion of five to forty or sixty grains to the ounce, generally from ten to twenty grains is the strength required, the former for young persons and those with tender skin, and the latter for non-irritable surfaces.

The objections to the use of the chrysarobin ointment, are the discoloration of the skin, and the irritation it sometimes produces. It also stains the clothing and bed clothes, when employed as an ointment, and consequently frequently cannot be

ordered. When used it should be well rubbed into the patches, care being taken not to go beyond the limits of the affected part. Lately these objectionable features have been overcome to a great extent by combining it with a solution of gutta percha—the liq. gutta percha of the pharmacopœa ; it can be used in the same strength as the ointment. If many scales are present they should be first removed and the solution then applied with a brush for a few minutes until a coating has been produced ; this is to be repeated every two or three days, or as often as the previous application tends to become loose and separate. If an ointment is used it should be applied daily.

Chysarobin applied in either of the above methods will sometimes cause a psoriasis patch which has resisted other treatment to disappear in a few days. When it does act it acts rapidly, but like all methods of treatment its effects are not permanent, the psoriasis will return sooner or later. It is especially serviceable in old and obstinate cases ; if the skin is irritable or if the eruption is acute in character, it should not be employed. Neither should it be employed in psoriasis of the face or scalp ; its use should not be continued after the disappearance of the eruption.

If the eruption is general or acute in character, it is better to rely on the internal treatment previously recommended.

The discoloration of the skin can be frequently rapidly removed by the use of white precipatate ointment.

Some prefer goa powder to chysarobin on account of its cheapness and better action (Behrend).

Pyrogallic acid was recommended by Jarisch, as a substitute for chysarobin because it does not discolor the clothing. It is not painful and does not irritate the skin.

It acts slower, but sometimes very favorably ; it is used as an ointment in combination with vaseline, 1 to 10, and applied in the same manner as chysarobin ; it should only be applied when the affection is limited and the patches small, as it is not without danger to the system from absorption. Strangury and excretion of dark colored, tar containing urine, nausea, etc,, as by tar poisoning are the result of absorption of too large a

quantity of the acid. On account of this danger in its use, it is not to be ordered indiscriminately, if at all.

After the eruption has disappeared by any of the foregoing means, we should endeavor to prevent a relapse, and thus, perhaps, finally cause the skin to lose its tendency to take on the psoriatic process upon slight irritations. The system should be kept more or less under the influence of alkalies, malt liquors should be avoided, dyspepsia prevented by the use of only easily-digested articles of food, and non-irritating underclothing should be worn. If a relapse occurs, it should receive prompt treatment.

LICHEN RUBER.

Definition.—A chronic affection of the skin characterized by the formation of discrete or confluent, pin-head or somewhat larger sized, firm, acuminated, scaly, red papules, having a tendency to invade the whole surface and thus produce marasmus and death.

Symptoms.—At the commencement of the disease the eruption consists of isolated, slightly scaly, millet-sized papules, which appear in two forms: in the one form they are disseminated, of a bright or brown-red color, very dense in consistence, conical in shape, and the apex covered with a firmly adherent, dry, white, scaly mass, which gives a rough feel to the touch In the other form they are also disseminated and of similar size as those of the preceding form, but are pale-red in color, of a waxy shining appearance, the surface is smooth, rounded, and has a small central depression. This central depression corresponds to the orifice of a hair-follicle. The eruption may appear on any part of the body, but generally commences on the thorax or abdomen and afterward extends to the extremities, genital regions, and other parts of the body. The papules preserve their original dimensions during their entire existence, never increasing in size by growth at the periphery, the extension of the eruption always depending upon the formation of new papules of similar size and appearance to

the already existing ones. These new papules which are being continuously formed arise either in an irregular manner upon the skin, or in a row-like arrangement around or between existing papules. From the constant formation of new papules the skin over a greater or less area becomes more and more occupied by the eruption, until finally the whole area is covered by them, and consequently neighboring papules come in contact. When this last condition is present the eruption appears as a connected, red, infiltrated, patch, covered with scales, and having a dry, rough, uneven surface. At the periphery of such an area or patch, characteristic individual papules are always to be observed.

Instead of this irregular and diffuse manner of formation of subsequent papules, they sometimes arise in the form of several circles of closely seated papules around an already existing one. Afterward the more centrally seated papules sink in, become absorbed, and finally disappear, generally leaving the skin pigmented and atrophied in spots. In this manner variously sized patches arise, the central part of which is pigmented and contains atrophic depressions, while the periphery is formed of one or more rows of wax-like, shining, umbilicated papules. The umbilication of these papules depends upon the retrograde process taking place in them, and is not a primary condition, as in lichen planus. The papules never undergo any changes except resolution from cessation of the formative process, or atrophy from degeneration of the elements forming the papule.

The irregular and diffuse form of extension of the eruption is much more frequent than the aggregated and circular, and is generally the only form present, but the other may also occur exclusively, or, as occasionally happens, both forms are observed on the same person ; in which case the former is met with principally on the trunk, and the latter on the extremities. No matter in which form the eruption spreads, or whether it is accompanied by atrophy and pigmentation or not, it finally, as a rule, extends so as to occupy the whole cutaneous surface, when all signs of papule formation disappear, and the skin

appears everywhere reddened, thickened, furrowed, and covered with numerous thin, whitish scales. The skin of the face becomes dry, cracked, and scaly, the lower lids ectropic, the upper lids droop.

The thickening of the skin is especially to be observed on the palms of the hands and on the soles of the feet, where the eruption does not appear as papules, but as great thickening of the corneous layer. In consequence of this thickening the fingers and toes stand out apart from each other, half bent, and show, besides redness and infiltration, deep fissures and rhagades. Muscular movement is interfered with, especially at the joints, so that the patient can only with difficulty keep the extremities fully extended or flexed, and consequently seeks a position between these two conditions. When the eruption is general over the whole surface the nails always become affected; they are greatly thickened from a deposit of nail-substance from the bed of the nail, are of a yellowish-brown color, very brittle, and have an uneven surface. If the deposit takes place from the matrix alone, then the nail consists only of a short, thin, brittle plate, which projects from the flesh. The nutrition of the hairs at the seat of the eruption is always interfered with, the hair becomes thinner, falls out, and is replaced by lanugo hairs. The hair of the head, axillæ, and pubis, situations where it grows strongest and is most deeply seated in the skin, resists the process longer than that of the rest of the body. The eruption appears without prodromal symptoms, and the papules, if situated on tbe covered parts of the body, may have developed without the knowledge of the individual affected. During the first stage, and also subsequently, there may be considerable itching present, but it bears no relation to the intensity of the eruption, and is much less than that accompanying many other skin affections. The general nutrition of the body is not interfered with until the eruption occupies a considerable area, when it suffers, and if the entire cutaneous surface is occupied by the disease the system becomes more and more affected, and after a few years the person passes into a marasmic condition, from which he dies;

unless he previously succumbs to complications depending upon this marasmic condition, as pneumonia, pleurisy, intestinal diseases, etc. This is the natural history of the disease, but under proper treatment the eruption may disappear without affecting the general constitution, or leaving traces of its previous existence upon the skin. When removed by treatment the disease is not liable to return. If it is not very extensive it may also disappear spontaneously.

Anatomy—Microscopical examination of a recent papule shows the corneous layer to be greatly hypertrophied from an increase in the size and number of the corneous elements. The individual elements also show an aberration from the normal process of corneous transformation, as many of the cells are incompletely transformed, as shown by the presence of nuclei and their coloring with carmine. The nuclei are either granular in appearance or vesicular in form (aufgeblæht). These incompletely changed cells are seen especially about the orifices of the sweat ducts and hair follicles. All the corneous cells are much larger than normal and more polygonal in shape, especially in the lower strata. The rete mucosum is hypertrophied in some places and normal in others. There is a slight growth downward of the inter-papillary part, and a more marked growth of the rest giving to the upper part of this layer an uneven surface. The rete bodies are of normal size and appearance. The granular and stratum lucidum layers are not as distinct as usual. The papillæ are increased in size from the growth of the rete downward; their bloodvessels are somewhat dilated, and a few emigrated corpuscles are present outside the vessels. There is no appreciable œdema of the connective tissue, except that some of the bloodvessels are dilated and a few emigrated corpuscles are found near them. The sweat glands are normal except the duct in the corneous layer, the walls of which are formed by large cells, some of which have vesicular nuclei. The hair follicles are unaffected except at the orifice, where there is a large collection of corneous cells. The muscle-bundles are much hypertrophied.

In papules which have existed for a considerable length of time there is a continuation of the processes observed in the recent papule and afterward retrograde changes leading to atrophy of the part, or there is a return to the normal condition by cessation of the abnormal keratosis process. The corneous layer is much thicker than in recent papules, but the character of its elements as regards size, shape and structure remain the same. The rete is somewhat thicker than normal and its upper surface is very uneven. This unevenness of the surface depends upon the hypertrophied corneous layer, and as this is greatest at the orifice of the sweat ducts and hair follicles, it is here that the projections extend furthest downward. The rete cells are not increased in size, but in many places are

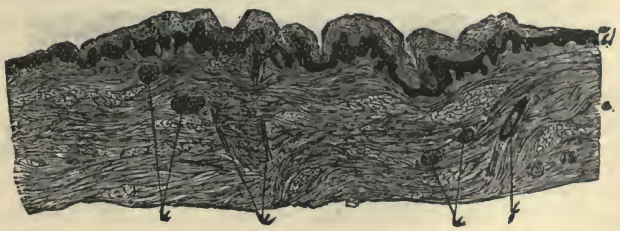


FIG. 51.—Vertical section of a recent papule of Lichen Ruber. *a*, corneous layer; *b*, rete mucosum; *c*, corium; *d*, unstriped muscle-bundles cut transversely; *e*, sweat-ducts; *f*, hair-follicle. The section includes normal skin at the periphery.

small from pressure by the corneous layer. The cutis papillæ are but slightly enlarged, the papillary bloodvessels somewhat dilated, and there are a few round cells outside the vessels. The corium is normal except in the neighborhood of the bloodvessels. The majority of the bloodvessels are dilated, and scattered lymph corpuscles are seen around them. The muscles are hypertrophied. Some hair follicles show hypertrophy of the external hair sheath while others are normal.

In the center of old papules a retrograde process often occurs, consisting in a degeneration of the rete and destruction of a portion of the underlying corium.

Lichen ruber is therefore a para-typical keratosis, as shown by the digression which occurs from the normal process of

transformation of the corneous cells as regards size, shape, structure, chemical constitution, and manner of being cast off. Upon these grounds I have placed it among the hypertrophies of the epidermis and not among the inflammatory diseases, as done by the majority of writers.

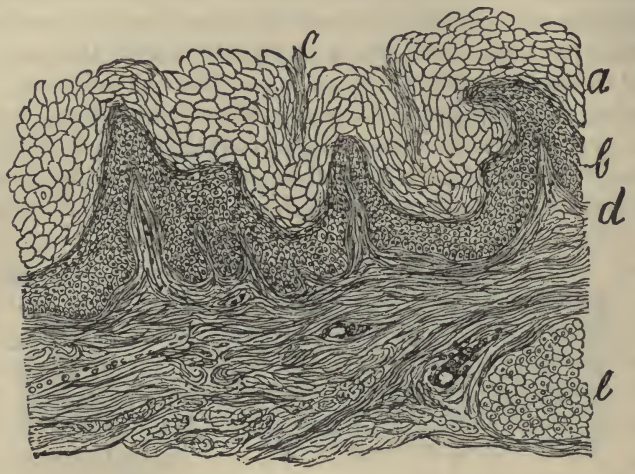


FIG. 52.—Vertical Section of a papule of Lichen Ruber which had existed several weeks. (More highly magnified than Fig. 50.) *a*, corneous layer; *b*, rete mucosum; *c*, region of sweat-duct orifice; *d*, corium; *e*, unstriped muscle-bundle. (From the lumbar region.)

Etiology.—The cause of the affection is not known. In all of Hebra's cases the eruption appeared upon previously healthy persons. It is more frequent in males than females, and appears generally between the ages of ten and forty. It is neither hereditary nor contagious. Direct irritation of the skin in the neighborhood of papules causes a more rapid development of new papules in that situation.

Diagnosis.—When the eruption is disseminated it may be confounded with psoriasis punctata, eczema papulosum, lichen planus, and the papular syphiloderm. In psoriasis the spots soon increase in size by peripheral growth and form scaly patches, which never occurs in lichen ruber. As some of these

larger patches are always present the diagnosis is easy. In papular eczema, the papules either rapidly retrograde and disappear, or some of them become vesicles. The whitish scales and dark color of lichen are also absent. In the papular syphiloderm the papules increase in size by peripheral growth, they have very few, if any, scales on their summit, they appear rapidly over the whole body, and disappear by degeneration, leaving atrophic spots. When the lichen ruber is universal it may resemble psoriasis universalis, eczema chronicum squamosum, or pityriasis rubra universalis. In psoriasis the scaling is very considerable and there are generally places of healthy skin from which the eruption has already disappeared. On the extensor surfaces the scales are very thick and easily detached ; in lichen they are finer and more adherent. In psoriasis, the palms of the hands and soles of the feet almost invariably escape, while in lichen they are much thickened. In chronic eczema there are always some situations where the symptoms of acute eczema vesicles are present. In pityriasis rubra universalis there is no inflammatory thickening of the skin and the scaling which is always extensive, consists of very large thin or fine branny scales. There are no papules present at any time in this disease.

Prognosis.—The disease, if allowed its natural course, invariably proves fatal, as shown by the first fourteen cases observed by Hebra. When treated by arsenic in the proper manner, the eruption can always be removed, unless the person is already in a very advanced stage of marasmus.

Treatment.—With the exception of arsenic there is no substance, applied externally or given internally, which is known to have any specially favorable effect upon the course of the eruption. Arsenic, however, may be regarded as almost a specific, if given in sufficiently large doses and its use continued long enough. The dose should be at first small and gradually increased every four or five days until the maximum dose which can be well borne by the individual is reached, and this quantity is then continued until the eruption has disappeared, when a small quantity is to be given for three or four

months longer. To abate the itching, alkaline baths or ointments containing carbolic acid, salicylic acid, oxide of zinc etc. may be employed the same as for itching in other affections. The general nutrition of the body should be attended to. A starch diet with plenty of milk is probably to be preferred.

KERATOSES WITH PAPILLARY HYPERTROPHY.

Here not only the epidermis, but the papillæ also are hypertrophied. This was probably the case to a small degree in cornu cutaneum—which, indeed, bears a very close relationship to the first affection we shall consider under this head—verruca.

VERRUCA.

Syn.—Wart.

Definition.—Verruca consists of a localized hypertrophy of the papillæ and of the superincumbent epidermis, forming more or less prominent, circumscribed, hard or soft papillary elevations of the skin.

Symptoms.—The papillary elevations of skin which are commonly called warts are always acquired formations; the various pigmentary and hairy growths described by Hebra and Kaposi under the name of verruca congenita belonging more properly to the nævi, where they will be considered under the title of n. verrucosus and n. pigmentosus.

Warts appear under a variety of forms, in accordance with their locations and the accidents of their growth. The commonest of all are the ordinary warts, or verrucæ vulgares. These occur in by far the greater number of cases upon the hands, though they are sometimes seen on the feet and upon the face and head. They almost always appear in young individuals, in males more frequently than in females; they come spontaneously, grow to a certain size, remain stationary for a longer or shorter time, and usually eventually disappear of themselves. They consist of small circumscribed growths

seated firmly by a broad base upon the skin, and rarely exceed a large pea or a bean in size. Sometimes a number of them situated close together become confluent and form larger masses. They may be soft in consistence, but are usually hard and horny upon the surface. When young they are smooth, but later the drying and splitting of the horny layer gives them a roughened or even stubby brush-like appearance at the apex. Their color is usually like that of the surrounding skin, though they may be yellowish-brown, or even blackish at times; the darker shades being due to the accumulation of dirt in the interstices of the horny covering. They are not sensitive. They may appear singly, but often come in groups, or rather in crops; some individuals exhibiting a marked tendency to their formation. Each wart persists for a varying time—perhaps for months or years—and then disappears spontaneously. Occasionally they last for life. There is absolutely no foundation for the popular belief in their contagiousness, nor in the ordinary ascribed causes. A local mechanical irritation is probably the main factor in their production.

Another and rarer variety of wart is the kind that is seen in old people, and usually upon the back, and which is known as *verruca senilis*, or, from their shape, *v. plana.* They occur upon the trunk—sometimes upon the face or arms, as flat papillary elevations varying in size from a small pea to a finger-nail. Their surface is soft, fairly smooth and often of a dark brown or blackish color; hence another name by which they are known—*keratosis pigmentosa.* They may become quite large and sometimes appear in numbers upon the face; they are an expression of the well-known tendency of the epithelial tissues to hypertrophy during later life. They consist mainly of hypertrophied epidermis, the papillæ being but slightly affected.

Filiform warts.—*V. filiformis* are commonly seen upon the face, eyelids and neck. They are generally single, and consist of small, thread-like or sessile tumors, usually not longer than an eighth of an inch.

A wart very like the plana form is found upon the scalp of

certain individuals, and consists of a flat, broad, slightly elevated papillary formation, perhaps as large as a finger-nail. They may be single or multiple. When warty growths remain unchanged for long periods of time they are called *v. perstans;* when they fall off from time to time and are succeeded by others the affection is designated *v. caduca.*

There remains for consideration a variety of wart which is of considerable interest in an etiological and diagnostic point of view, namely the *verruca acuminata*, or venereal wart—or pointed wart. The affection rejoices in quite a variety of names, amongst which are, besides those already mentioned, the following: Condylomata acuminata, verruca elevata, cauliflower excrescence, moist or fig wart, etc., etc. They form the great mass of the growths commonly called venereal warts, but they are not venereal in any thing save that they occur around the genitals. They consist of pointed, club-shaped or irregular, raspberry-like elevations, situated upon the normal skin or mucous membrane in the vicinity of the male and female genital organs. In color they are bright red or even purple, in accordance with the vascularity of the part. Their surface is soft and moist; their consistency is succulent. They may occur as isolated pedunculated tumors or as irregular, more or less solid masses of vegetations. They are most commonly found upon the penis, springing from the glans and sulcus, and the inner surface of the prepuce; in the female they are oftenest found upon the inner surface of the labia and in the vagina. They often spread from these situations on to the outer surface of the penis and labia; in which case they will not be soft, but are dry and hard—more like ordinary warts. In the female they sometimes cover the entire perinæum, and are found around the anus and on the rectal mucous membrane as far as the external sphincter. They have also been seen in the mouth, axilla, umbilicus and between the toes. When they occur upon the moist genitalia they are usually covered with yellowish, decomposing pus, of a most offensive odor. Blenorrhœa is almost always present, and more or less inflammation of the skin upon which the growths are situated results from the irri-

tation. In neglected cases in females—and it is in these cases that the best examples of venereal warts are found—the large, fungating vivid red masses covering the labia and perinæum, bathed in yellow decomposed pus from the intense vaginitis and gonorrhœa form a very disagreeable condition for the patient.

Venereal warts grow quite rapidly; they may become very large in a few weeks. Though they sometimes occur among the better classes, they do not usually attain any size in those who pay due attention to their personal cleanliness.

Anatomy.—In most warts the essential pathological change is a hypertrophy of the papillæ and the epidermis. In the ordinary cutaneous wart we find one or more greatly enlarged papillæ, with a capillary loop running up through the centre. The rete cells are immensely hypertrophied, and many of them are in a state of active proliferation. Above this there is a more or less thick layer of densely packed corneous cells.

The filiform wart frequently found upon the delicate skin of the breast, the neck, and the eyelids, does not seem to involve the papillæ. It consists of a small outgrowth of connective tissue from the depths of the skin, carrying a bloodvessel in its center. Anatomically, therefore, it approximates very closely to fibroma molluscum.

The venereal warts consist of hypertrophic papillæ, but are largely formed of new connective tissue cells. Usually a bundle of papillæ lying side by side are affected; hence their spreading, cauliflower-like mode of growth. As they are usually kept moist and warm, the horny layer is generally wanting; the cells of the mucus layer are very numerous and active; the growths are delicate, bleed easily, and grow rapidly. The presence of more or less cell-infiltration explains the presence of connective tissue in them when of long standing.

Etiology.—We do not know what influences the production of these growths. They are of frequent occurrence in children, and especially in those of scrofulous tendency.

Venereal warts are always caused, primarily, by the initiation of a gonorrhœal discharge, though they may persist long after

it has stopped. They are contagious only in so much that one of them will cause the development of a similar growth in any contiguous surface; but no real transmission has ever been observed. Dirt and neglect have much to do with their development.

Diagnosis.—This is always easy, and requires no special description beyond that given in the symptoms.

Prognosis.—Is good. Repeated applications or excisions may be necessary. Large ones should be removed piecemeal, to avoid excessive hæmorrhage; as the soft venereal warts bleed freely when cut.

Treatment.—These excrescences may be removed in various ways. Excision is as good a method as any, care being taken either to remove the papillæ at the base or to cauterize it after the mass is cut off. The softer ones may be snipped off with a pair of scissors, or scraped out with the dermal curette. If they are very vascular it may be preferable to use the galvano-cautery, or the wire ecrasure, or an elastic ligature. The ordinary warts may be removed without any such "operative" procedure as is recommended above. The acid nitrate of mercury, any of the mineral acids, chloride of zinc, caustic potassa, nitrate of silver, or even tincture of the chloride of iron will do it. Before any of these are used, however, the hard surface of the wart should be softened by poulticing or by alkaline washes, and the surrounding healthy skin protected by wax, or oil, or plaster, etc.

For the venereal warts, nitric, sulphuric, hydrochloric, chromic, or carbolic acids are usually sufficient. Sometimes merely keeping the surfaces dry and clean, and using calomel or lycopodium, will cause them to shrivel up and disappear. Alum or acetate of lead lotions will do the same. If pedunculated the base should be tied with a thread, when the wart falls off in a few days; the base can then be touched with a caustic.

Nitric acid is the best application for large non-pedunculated warts.

ICHTHYOSIS.

Synonyms.—Fish-skin disease; Xeroderma.

Definition.—Ichthyosis is a chronic, hypertrophic, hereditary, general or local disease of the skin, characterized by dryness or scaliness of the integument.

Symptoms.—Ichthyosis is rather to be regarded as a deformity than as a disease, in the strict sense of the word. It depends upon an innate tendency of the skin of certain persons toward an excessive formation of epidermis. The entire cutaneous surface may exhibit this peculiarity, in which case we call the affection *ichthyosis diffusa;* or only certain portions of it may show it, giving us *ichthyosis follicularis.* The latter variety is very rare. Still a third form is the *ichthyosis congenita.*

The diffuse ichthyosis, which is practically the only variety with which we have to deal, is found in two forms, differing from one another, however, simply in degree. The milder cases are designated *ichthyosis simplex*, and the severe ones *ichthyosis hystrix.* The appearances presented by these two forms vary to some extent, and they merit a separate description.

1. *Ichthyosis simplex.*—The very mildest form of the affection has been designated xeroderma by Wilson and Tilbury Fox. In it, the integument is dry and harsh, somewhat thickened, with the natural furrows and marking moderately exaggerated. Actual scaling does not take place, only a slight furfuraceous exfoliation. In a somewhat more marked form, which is the usual state in which we encounter the disease, the formation of the corneous epithelium is more rapid, and it accumulates upon the skin in the form of dry scales and plates. They correspond in their shape and direction to the normal lines and furrows of the part they cover, forming upon the extremities small polygonal or diamond-shaped plates; they may be very small, thin, and furfuraceous, or they may be thick and horny. In the lighter forms the scales are white and pearly, but if very thickly developed they become more or less dark in color,

sometimes even olive green or greenish black. This coloration is not due entirely to the presence upon and among the scales of extraneous matter, dirt, etc., alone, for the subjacent skin itself becomes darker in color, and pigment granules have been demonstrated among the scales. They are generally rather firmly attached to the deeper tissues, but can usually be removed from the surface without causing bleeding. The roughened and dry integument covered with polygonal scales bears considerable resemblance in feeling to the skin of a serpent or a fish ; hence the name of the disease. Frequent bathing, etc., tends to prevent the accumulation of scales; but if left undisturbed they grow in size, and may form laminæ of considerable thickness.

Ichthyosis Hystrix—In this, the most advanced stage of the disease, the corneous cells accumulate until they form various sized, rough, heaped-up masses of epidermal tissue. Horny papules and large irregular plates appear, in which, however, the normal lines and furrows of the skin are not only preserved, but intensified. This variety is not likely to be so uniformly developed as the other ; it is most often seen as solid, warty, corrugated plates or streaks upon one or a number of portions of the body. In some cases there is marked papillary outgrowth, and spines several lines in length may stick out from the tuberous mass. From their resemblance to the quills of a porcupine comes the designation hystrix. The patches are yellowish, brownish or greenish in color ; the older they are, the darker they become. The epidermic desquamation is marked, and the patient leaves piles of dried scales in his clothing and bedding.

Ichthyosis of either variety may be general, spreading over almost the entire surface of the skin, or localized ; but it affects by preference certain parts, and is more advanced in these parts even when the eruption is diffuse. Those portions are the skin covering the extensor aspects of the limbs and joints, situations where the integument is normally thick. In mild cases the disease usually shows itself first upon the skin covering the knees and elbows. The opposite surfaces of

these points are rarely affected, and the contrast between the two is often striking. The backs of the hands and feet, the skin of the thighs and shoulders, as well as the trunk, often exhibit the malady to a marked degree. As a general thing, even in the most advanced and diffuse cases, certain parts escape; these are the face, the palms and soles, and the glans penis and prepuce. Nevertheless cases have been seen in which the palms and soles have not only been affected, but have formed the chief seat of the disease, and in any case we generally find the extremities cold and blue.

In almost all instances, no sign of the disease is visible at birth. The child appears to be perfectly healthy, and it is not until the end of the second month at the earliest that it first appears; often it remains latent until the second year. It begins gradually, being first noticed as a slight roughness and dryness of the skin at its points of election—viz.: the extensor surfaces of the limbs, and especially of the elbows and knees, and whatever the grade of the disease it is at those points, as we have seen, that it is always most markedly developed. In many cases a noticeable advance in the condition occurs at the period of puberty. Once having reached its height, the course of the disease is chronic, and but little subject to change. It lasts for life—being always better in summer, when the increased activity of the sweat-glands macerates and renders easy of removal the superabundant epidermis; but the malady speedily returns to its old state when the cold weather sets in. In some cases a regular "moulting" has been observed; during the summer the epidermic plates and scales fall off, leaving the skin for a short time in an almost normal condition. The same thing has been observed when ichthyotic patients are attacked by severe general diseases; the only cases in which a complete cure has occurred are two reported by Hebra, in which the deformity completely vanished after attacks of one of the exanthematic fevers.

Patients suffering from ichthyosis usually enjoy excellent general health; even in its most advanced degree it does not seem to exercise any deleterious influence upon the organism at large.

3. *Ichthyosis congenita.*—In a certain small proportion of cases, ichthyosis begins as an intra-uterine affection, and is present in marked degree at the time of birth. Whilst the pathological process is exactly the same as in the more ordinary forms of the disease, the appearance and course of this variety of the malady differs from them in many respects.

Such children are usually born before the ninth month, and are correspondingly small and puny. Their entire body is found covered with horny plates and scales, varying in size from a line to half an inch or more. Upon the trunk the deep furrows that divide them from one another run transversely; upon the limbs they are disposed longitudinally, save at the flexures of the joints. The armor-like skin seems to have entirely lost its elasticity, and is split and fissured as the fœtus has grown. The lips are wanting and the horny plated skin of the chin ends in the alveolar processes. Eyelids and external ears are also wanting. The fingers and toes are shortened and bent by the unyielding skin.

As might be supposed, these monstrosities, if born alive, usually live but a few days. Nine days is the longest period of post natal life, and occurred in a case recorded by Jahr. The extensive alterations in the skin an organ even more important in infant than in adult life, together with the impossibility of suckling, from the absence of the lips, accounts for the uniformly fatal issue of these cases.

Anatomy.—According to Neumann, the papillæ are enlarged, their bloodvessels dilated, the cutis dense, the lumen of the veins narrowed by growth from the interior, the corneous layer thickened, consisting of superimposed lamellæ, and the rete between the papillæ much hypertrophied. The hair follicles are lengthened and contain lanugo hairs, the external root-sheath hypertrophied, the sebaceous glands dilated to a cyst form, the sweat glands dilated and the subcutaneous fat diminished. In severe cases the hair follicles are absent, and the epidermis consists of yellowish-brown to dark-brown lamellæ.

According to Barensprung, the papillæ are enlarged, pigmented, the vessels dilated, the follicles diminished in number, and those present but very small, the sweat glands unaffected, and a new growth in the subcutaneous fat tissue.

G. Simon found the epidermis, cutis and papillæ thickened and the glands unchanged. In a case reported by Kaposi, the sebaceous and sweat glands were absent, the hair follicles were normal, the papillæ enlarged, the bloodvessels dilated and there were round cells in the cutis.

In a well marked case of ichthyosis I found the corneous layer greatly hypertrophied and consisting of thick superimposed lamellæ. The upper three-fourths of the corneous layer was frequently separated from the lower part by narrow or broader clear spaces. The rete was unchanged as far as could be judged; the papillæ and their bloodvessels were slightly

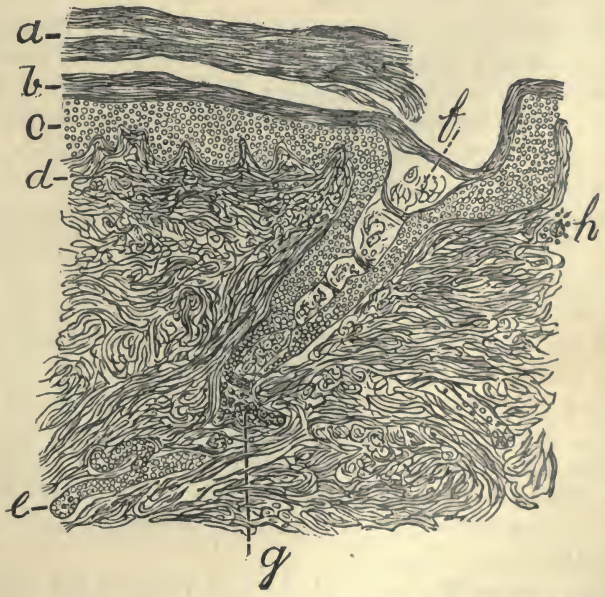


FIG. 53.—Section of ichthyotic skin. *a* and *b*, corneous layer with space between, *c*, rete; *d*, upper part of corium; *e*, sweat glands; *f*, orifice of sebaceous gland; *g*, sebaceous gland proper; *h*, slight round cell infiltration.

enlarged, and a few round cells were observed in the papillæ and upper part of the corium. The subcutaneous fibrous connective tissues were normal. The sweat glands were plentiful and of normal appearance and size. The hair follicles were unchanged. The secreting portions of the sebaceous glands were very small and undeveloped; instead of two or more ascini there was only a single small undeveloped gland structure. In Fig. 53 is represented a section from this case.

In ichthyosis, then, different morbid conditions have been found in different cases. All agree that the corneous layer is hypertrophied and otherwise unchanged. Although the skin is dry the sweat glands are probably usually well developed. The dry condition of the skin depends upon the amount of scales and perhaps deficiency of sebaceous matter. The inflammatory condition described by some as existing can not be an integral part of the ichthyosis.

Etiology.—Ichthyosis depends upon a congenital predisposition of the skin to the disease. In almost every case it may be clearly shown to be an hereditary affection. One of the parents or grandparents has had it, perhaps only in a slight form. It is usual for the father to transmit it to the male children only, and the mother to the females; but there are many instances of transmission from father to daughter, and from mother to son. When there are several children, more than one are usually affected.

It has been claimed by some authorities that race and climate are important factors in the etiology of the disease, and they point to the fact of its being endemic in certain portions of the world as proof. Thus it is very common in Paraguay, and in the Moluccas at least five per cent. of the population suffer from it. Nevertheless, it has not been proved that either race or climate have any thing to do with it; for all hereditary diseases tend to spread in isolated regions where "interbreeding is the rule."

We know nothing at all of the real cause of the malady. Heredity is not so well proven a factor in the congenital form of the disease.

Prognosis.—As regards the removal of this condition, the prognosis is unfavorable; the scales continue to form in spite of all treatment. Mild cases improve sometimes with advancing age. The disease has no effect upon the general health.

Treatment.—Internal treatment seems to be of little avail; with the exception perhaps of oily substances. I have seen linseed oil do some good occasionally. It should be given internally and applied externally also. Arsenic, jaborandi, etc., have no effect upon the cutaneous condition.

The excess of epidermis can be removed by frequent warm baths containing soda or common salt, or by washing with a strong soap and subsequently rubbing in olive oil, cod liver oil or linseed oil. The water removes the superabundant epithelium and the oil keeps the skin moist and pliable. As this procedure is not curative, but simply removes a portion of the abnormal layer, it must be repeated as often as the scales show themselves.

In ichthyosis hystrix it may be necessary, in addition to the above described means, to employ caustics or the knife for the removal of the horny patches which form.

SCLERODERMA.

Syn.—Scleroma; s. adultorum; scleriasis; dermatosclerosis; cutis tensa chronica; sclerosis corii.

Definition.—Scleroderma is a chronic non-inflammatory affection of the skin, characterized by a diffuse or circumscribed, pigmented, rigid, hide-bound and shortened condition of the integument.

History.—Scleroderma of adults is a disease of great variety, and one concerning which our ideas are by no means settled. Alibert, in 1817, was the first who unmistakably described the affection. Since that time a considerable number of cases have been reported, numbering perhaps as many as 80 in all. In spite, however, of extensive studies by competent observers, it is doubtful if to-day we possess any more knowledge about it than a fairly exact appreciation of its external symptomatology.

Its etiology, pathology, and certainly its treatment, are problems for the future to elucidate.

Symptoms.—Scleroderma sets in, as a rule, without either general or local subjective phenomena. In exceptional cases chilliness, and slight fever, numbness or formication of the part is noticed; but usually there is nothing to draw the patient's attention to the changes beginning in his skin until he appreciates a slight stiffness or rigidity of some portion of the integument. This rigidity increases in extent and severity with greater or less rapidity, until the disease has attained its full extent. It is often months or years before that point is reached.

The sclerosis of the skin may occur in localized spots, perhaps as small as a silver dollar; or it may consist of a diffused and even thickening of the entire integument; and between these two extremes various extents of skin may be involved. The distinction, therefore, between partial sclerema—*sclérême en placard*, and universal sclerema, is one of extent only; the process is identical in both cases. Cases in which more than half of the cutaneous surface is affected are called s. universalis.

The skin over the affected area, be it large or small, is thick, stiff, hard, brawny, or even wooden in feeling to the touch. It seems cold, and Thirial aptly compares it to the feeling imparted by the skin of a frozen corpse. Its surface is smooth and hard, sometimes slightly desquamating; it cannot be pinched up into folds, nor does pressure with the finger indent it. As the disease advances the subcutaneous connective tissue, fasciæ and muscles become firmly bound to the skin.

The sclerosed tissue passes imperceptibly into the healthy skin; there is no line of demarcation, though there may be a faintly defined hyperæmic area just outside it. It may be slightly raised or level with the skin, or even sunken. Its surface is usually smooth; but in some cases more or less papillary hypertrophy, resembling a localized ichthyosis, is present. Its color may be dull-white and waxy, or white and shining; but it is very often pigmented either a diffuse reddish-brown

or bronze, or a more or less extensive yellowish or brownish spotting, intermingled with dull white patches. In all cases, as the disease advances, the subjective disturbances become marked. The patient feels hide-bound, his skin literally becomes too small for him; for whilst in the early stages the skin is increased in volume, later, a stage of atrophy sets in, and the integument is actually shortened. The joints may become fixed in a semi-flexed condition. The face appears frozen; the hardened features no longer reflect the emotions of the mind; the orifices of the mouth and eyes are diminished in size, and can hardly be opened, and a case is reported by Fagge in which the patient actually starved to death from inability to chew his food. The immobility of the fingers may render the patient incapable of earning his living. The mucous membranes near the integument, as that of the mouth and vagina, may show the same hard, thickened, pigmented patches of sclerotic tissue. The temperature of the sclerosed skin may be normal, but is often depressed a degree or two. The sense of touch is usually unaltered over it; none of the secretory and other functions of the integument seem to be affected. The part is just as liable as the normal skin to inflammation when irritated, and erysipelas, acne, variola and zoster have been observed upon it. As a rule, the general health remains good, though rheumatism and neuralgia have been noted in some cases.

The malady is usually symmetrical, and any part of the body may be attacked; it most often occurs upon the neck, face, shoulders, back, and arms.

The process has reached its height when the sclerosed patch (plaque) is fully developed. The further course of the disease varies in different cases. In a certain number of instances the affected part now undergoes a process of involution. In the course of from a few days to many months the hard, board-like feeling gradually disappears; the skin regains its normal size and pliability, and returns to its usual state. Nevertheless, though this is the case with individual spots, the process as a whole does not usually disappear. New patches replace the old ones, or spots already healed are again

attacked. Eventually, in some cases sooner, in others later, the atrophic stage sets in.

In this stage an atrophy replaces the former hypertrophy, an atrophy in which not only the skin, but the subjacent tissues participate. The integument becomes thin, parchment like, dull white or rosy or irregularly pigmented ; it is even tenser and more stretched than it was during the first stage. Under the ever-increasing pressure, fat and muscle gradually disappear, until the limbs seem to consist solely of bone covered with tightly adherent skin. There occur ulcerations of the tense skin over the flexor surfaces of the joints, pseudo-anchylosis, etc. A return to the normal condition is now no longer possible.

Thus the disease varies from month to month, and from year to year ; leaving one surface to attack another, and in but few cases going on to a complete cure. Most often the total affected area slowly but surely increases. In the early stages, for years the general health may remain good ; but then comes a time when, from the neuralgic and rheumatic pain, the want of sleep, the physical depression, etc., a state of general marasmus sets in. Nevertheless, in all the recorded fatal cases the patient has died from some intercurrent disease—Bright's, phthisis, pneumonia, etc.

A number of cases have been reported in which patches of morphœa accompanied the disease under consideration ; and indeed morphœa offers many points of resemblance with partial sclerema. Schwimmer asserts that morphœa localis and limited scleroderma are one and the same thing.

Anatomy.—The immediate pathological process in the skin consists, according to many observations, made both upon the living and the dead subject, in an increase and crowding together of the connective tissue of the skin. The number of elastic fibres in the tissue is increased. The fat is atrophied, and its place is occupied by the new tissue ; and the thickened skin rests directly upon the bones. The papillæ are unaltered, save when the warty condition before mentioned occurs ; then they are hypertrophied. The corium and the subcutaneous

tissue are the parts chiefly affected. Secondary pathological effects are the increased amount of pigment in the rete or corium, the hypertrophy of the muscular fibres, dilatation of the sweat glands, etc. The vessels are diminished in calibre by the connective tissue that presses upon them. The perivascular lymph spaces are crowded with cells, in some cases forming close heaps situated between the vessel and the surrounding connective tissue.

In the atrophic stage the new tissue shrinks, and largely disappears. The glandular structures also become deformed and atrophied.

In conclusion, we may say that the disease seems to consist of a diffuse or circumscribed connective tissue hypertrophy and new growth of the skin, ending in resolution, or in atrophy, and due to some unknown nervous disturbance.

Etiology.—There is but little to be said in regard to the etiology of scleroderma. We know that it occurs at all ages—though most often during adult life; and that for some unexplained reason women are far more liable to it than are men. Violent nervous shock—as well as the usually appealed to agent, exposure to cold, has been regarded as influential. In many cases an attack of rheumatism has been noted to precede the onset of the disease.

Heller, basing his conclusions upon the post-mortem findings of a single case, has affirmed that a closure of the thoracic duct or other lymphatic canals and a backward pressure and stagnation in the lymph in the ducts was the cause of the malady. The constancy of that lesion has not been verified by subsequent observers. Nor do the locations of the individual scleremic patches correspond to the distributions of the branches of the lymph channels. And, further, lymph stasis causes quite another disease—namely pachyderma.

A variety of lesions in the central and peripheral nervous system, and in the sympathetic system, have also been observed in individual cases, such as sclerosis of the anterior horns, fatty atrophy of peripheral nerves. But their great variety and their inconstancy must cause us to regard them as accidental, and

not as essential lesions. In default, therefore, of a better explanation, we must regard scleroderma as a trophoneurosis—an opinion which is strengthened by the fact that it undoubtedly has occurred after violent mental emotions, and, that in a case of Eulenberg's, progressive facial atrophy (an acute trophoneurosis) occurred together with scleroderma of that locality.

Diagnosis.—The diagnosis of scleroderma is usually not difficult, as the solid, white or pigmented, hard, frozen-corpse-like feel of the otherwise unaltered skin should be sufficient to reveal it. Two affections only can be confounded with it. The first is the true keloid—which, however, is always very limited and is not nearly so stiff and immovable. More difficult, in many cases, will be the diagnosis between scleroderma and morphœa. Many authorities—especially those of the English school—regard the latter disease as a localized scleroderma ; and it must be admitted that in many cases the distinction is difficult to make, and that the two diseases may possibly be closely connected with one another. Scleroderma is usually extensive, and may be universal in its distribution, and is not limited by any distinct line of demarcation ; morphœa appears in small areas, and has a distinct boundary line marked by a pinkish border. In scleroderma the skin is hard and stiff from the beginning—it appears as if frozen, but is otherwise unaltered ; morphœa commences with hyperæmia, is usually softer, and the skin can be raised in folds. Scleroderma tends to be symmetrical, and comes on without any subjective sensations ; morphœa usually occurs on one side, begins with marked pain and tingling, and moreover usually corresponds to definite nerve-tracts. Finally, the striæ atrophiæ and enlarged vessels are absent in scleroderma ; nor does the disease have so universally a chronic course as does morphœa.

Prognosis.—Is unfavorable upon the whole. As a usual thing, it goes on until the stadium atrophicum is reached, and contractions, immobility of parts, ulcerations, etc., occur. Meanwhile, the patients usually die of intercurrent diseases. Recovery sometimes occurs, but is only to be hoped for during the hypertrophic stage.

Treatment.—Although there is no known method of treatment by which scleroderma can be cured, there are a variety of measures which have done good in certain cases. Above all things, general hygiene is important. Tonics, iron, quinine, cod liver oil, arsenic, etc., are to be recommended, as are sea voyages, mountain air, vapor baths, etc.

Various local applications have seemed serviceable. Mercurial ointment inunctions especially, together with massage, may be thus employed; as may be also the iodine ointment, glycerine, etc. The constant galvanic current has been recommended, especially by Schwimmer and Piffard.

SCLEREMA NEONATORUM.

Syn.—Sclerosis; induratio telæ cellulosæ neonatorum; skin-bound; algidité progressive.

Definition.—A disease of infancy, occurring generally a few days after birth, commencing usually upon the lower extremities and characterized by œdema, discoloration, hardness and coldness of the skin over a greater or less area.

Symptoms.—The disease is either congenital or appears two or three days after birth, and rarely as late as the second year. The intensity of the disease varies greatly in different cases. In the milder forms, after one or two days of restlessness, the skin, especially upon one or more of the extremities, becomes swollen, pale or slightly erythematous, colder, and somewhat swollen. There is increased transudation in the part, the skin is dry, tense, transparent, with diminished sensibility, and, if icterus is present, of a pale yellow color. This condition may increase and assume a severe form, or there may be a return to the normal state. When this latter occurs the skin becomes softer, paler, moist, and in one or two weeks is normal. This form is met with principally in the fat parts, as the calves of the legs, soles of the feet, fingers, hands and cheeks (Herring).

The more severe form of the disease occurs generally within the first week of extra-uterine life, and commences usually on the lower extremities, but may appear on any other part of the

body. It rarely extends over the whole surface. The order of frequency in which the different regions are affected is—lower extremities, pubis, arms, abdominal region to umbilicus, feet, hands, face, buttock, back, hips, neck.

After a few hours or several days of restlessness, and often intestinal and urinary derangement, the skin on the part becoming affected is paler than normal, and of a whitish or yellowish-brown with sometimes a reddish tinge, wax-like, œdematous, insensible and cold. Sometimes it is at first bluish, and afterward reddish or dirty-yellow brown. The amount of œdema and swelling varies ; sometimes the skin is tense, hard, but not swollen. To the feel it is as if diffusely infiltrated, hard, dense, cold, a feeling like that conveyed by a half-frozen corpse, pits upon deep pressure, and the epidermis is movable over the underlying infiltrated tissue. After a few days the œdema diminishes, and the part may be smaller than normal, hard, wrinkled, mummified and movement of the muscles interfered with. If the disease is seated on the face, the latter is wrinkled, fixed, giving an old appearance to the expression. If the lips are infiltrated, nursing is impossible. In some cases the infiltration creeps along the muscles, but generally it extends along the corium and subcutaneous tissue. It generally extends from the legs and arms downward to the feet and hands, and rarely in the opposite direction. When located in the pubic region it extends both upward and downward, and if upward, then seldom further than the umbilicus. Sometimes the margin of the infiltration is sharply limited, especially when extending along the muscles ; at other times it is ill defined.

The respiratory, circulatory, intestinal and urinary organs are generally more or less diseased, and their derangements are to be regarded as a frequent cause of the sclerema. Respiratory movement is not interfered with unless the thorax is affected or there is disease of the lungs. Nasal hæmorrhage is rare and is an unfavorable sign. Cough is frequent from bronchitis, pleurisy or pneumonia, conditions frequently present. Pulmonary œdema occurs before death. The pulse may be unaffected, but is generally small and slow. There is almost invariably marked

diminution in the temperature. In one case under my care, and exhibited to the New York Dermatological Society, the pulse was increased in frequency, and there was no diminution in the temperature, although there was no inflammation of the intestinal or respiratory organs to have kept it from being below normal. Diarrhœa generally precedes or accompanies the disease. The passages are thin, greenish and rarely bloody. Vomiting and icterus, with distension of stomach and intestines from gas, are generally present. The urine is small in quantity and clear or yellowish-white in color.

The disease lasts in favorable cases from two to twenty days, and in unfavorable cases from two to thirty-seven days, death resulting in these latter cases generally before the eighth day, from weakness and consequent œdema of the lungs, or from some complication, as pleurisy, pneumonia, peritonitis, etc.

Anatomy.—Opinions differ as to the nature of the process and the changes produced by it in the skin. It is evidently due to interference in the capillary circulation, an inflammatory stasis, a process between ordinary non-inflammatory œdema and an acute dermatitis. The coldness of the skin depends upon the stasis, the diminished respiration, and diminished tissue-change. After death the hardness diminishes and the part pits only upon firm pressure. The skin is paler than during life, and upon cutting with the knife, a dark liquid first flows, and afterward there is a thin yellow transudation, followed by disappearance of the œdema. The fat tissue is hard, from a "stearine-like" mass imbedded in it. Sometimes there is no serum in the subcutaneous tissue. The corium is less elastic, friable, and infiltrated by a thick, brown, sticky substance. According to some it contains collections of young embryonic tissue. Congestion, or bullæ with purulent contents have been occasionally found on the ankles. According to the causes, complications or consequences of the disease, as the case may be, pneumonia, pleurisy, bronchitis, peritonitis, or intestinal catarrh, are frequently present. The liver is congested, friable and yellowish from bile.

Etiology.—The disease may depend upon direct irritation to

the part, or arise in consequence of disease of internal organs, especially of the heart or lungs, or be the result of general malnutrition. Cold bathing, or exposure to cold, are examples of direct irritation. The disease is more frequent in winter than summer. Heart disease, pneumonia, diarrhœa, hydrocephalus, meningeal apoplexy, premature birth. syphilis, weak respiration leading to collapse of the lungs, tying of umbilical cord before respiration is well established, deficient nutrition and general weakness are to be regarded as indirect causes of the disease from their action upon the peripheral circulation.

Diagnosis.—The only diseases with which it could be confounded are erysipelas and the scleroderma of adults, but the induration, œdema, color and coldness of the part render the diagnosis easy.

Prognosis.—The prognosis depends upon the intensity of the disease. In mild cases, as already described, the prognosis is favorable, but in the severe forms it is a very fatal disease. About three-fourths of all cases die, and generally before the eighth day of the disease. The unfavorable symptoms are nasal hæmorrhage, pyæmia, diarrhœa, icterus, pulmonary complications, or location of the hardening in the œsophageal region, interfering with deglutition. In favorable cases there is often a long continuance of the œdema, with irregular pulse and labored respiration.

Treatment.—In the treatment of this affection, particular attention must be directed to the predisposing cause. If there is disease of the circulation, or respiratory system, care must be taken that depressing remedies be not used in their treatment. If pneumonia is present, cold applications to the chest should not be used unless the fever is high. In pulmonary collapse the result of general weakness and superficial respiration, warm mustard baths and stimulants should be used. The diarrhœa is to be treated by antacids and astringents, with regulation of the amount and quality of food. If the child is prematurely born, it should be kept in a warm room, and wrapped in cotton and oiled-silk. Sweet oil or olive oil can be used with the cotton. The child should be allowed or made

to cry good, so as to assist the pulmonary circulation. Baths are of advantage to the skin condition, but are not always well borne. The general nutrition of the child must receive special attention.

MORPHŒA.

It is impossible to give any exact definition of the condition chacterized by this name, since it is one, the essential characteristics of which are still a matter of dispute. Indeed, it is a question in the minds of many dermatologists whether the affection deserves a special place or a special name at all; they holding that it is merely a localized scleroderma. Nevertheless, there are many points in favor of its being considered a distinct and separate disease, the more important of which I will endeavor to describe.

Symptoms.—Morphœa appears under several distinct forms; and these forms may run into one another as the disease progresses, or it may preserve its original appearance from the beginning to the end of its course.

It most frequently commences by the appearance of circumscribed, rounded, or oval, or elongated hyperæmic patches from one-half to two inches in diameter. These patches are pink or purplish in color, distinctly circumscribed, and are surrounded by a more or less well-marked pink zone of injection, upon which, as well as upon the patch itself, congeries of enlarged capillaries can often be observed. In this, the earliest stage, the affected area is slightly swollen, and rises moderately above the level of the surrounding skin.

At a later stage the elevation disappears, and the patch becomes level with the skin, or even slightly depressed. It grows tough, leathery, or brawny to the feel, and can be with difficulty pinched up. The surface becomes smooth, whitish or yellowish, or pinkish, looking like polished ivory; more often it appears lardaceous, and has been likened to a piece of bacon set into the skin.

In this state the patches may remain for an indefinite time;

or they may sooner or later begin to undergo a process of spontaneous involution, resulting in a return of the integument to its normal condition. But in most cases there comes a time when atrophic changes begin ; the skin becomes contracted, dry, thin, parchment-like, or shriveled. It may become immovably bound down to the subjacent tissues. The fat and muscle atrophy, and eventually round, elongated or variously shaped cicatriform lesions are left, with considerable loss of power and deformity.

Besides these hypertrophic and atrophic forms of morphœa it may appear as more or less numerous small pit-like scars scattered over the affected area, and interspersed with glazed, pearly-white atrophic macules and streaks, forming the maculæ et striæ atrophicæ. A varying amount of yellowish or brown pigmentation is usually present, especially at the margins of the patches, as well as reddish or purplish telangiectasic spots.

The lesions of morphœa are asymetrical ; they may appear anywhere upon the body, but occur by preference upon the face, neck, breast, arms, and thighs. As a usual thing, they correspond to distinct nerve tracts—as the fifth or the branches of the sciatic. But in many cases they are quite irregular. Subjective sensations are usually absent, though precedent or accompanying pain and tingling have been noted. The glandular structures of the skin are usually atrophied, and the secretion of sweat and sebum correspondingly diminished. It is a chronic disease, lasting for many years. A considerable number of cases recover. It is a rare disease, but not so rare a one as scleroderma.

Anatomy.—But little is known concerning the pathology of morphœa. In the early stages, Crocker found pigmentation of the deeper epithelial layers, atrophied papillæ, and an increase of round cellular tissue among the gland structures and vessels. In the later stages he noticed that the cells had become developed into new connective tissue with an abundance of elastic fibres ; that this shrunk, and caused atrophy of the sebaceous glands, and obliteration of the sweat-ducts and blood-vessels. The subcutaneous fatty tissue disappeared early.

Crocker came to the conclusion that the process was the same as in scleroderma, only more superficial. Duhring found only condensation of the connective tissue of the corium, with shrinkage of the papillary layer.

Etiology.—We are entirely in ignorance concerning the cause of morphœa. It occurs in all constitutions, and at all ages; but far more frequently among women than among men. The fact that it sometimes occurs in connection with distinctly neurotic affections. would lead us to regard it as a trophoneurosis.

Diagnosis.—For the points of differential diagnosis between morphœa and scleroderma, the reader is referred to the latter disease. Whether the two names represent two distinct disease processes is still a matter of question.

The striæ atrophicæ can in some cases hardly be distinguished from the lineæ albicantes so often seen upon the abdomen.

The spots of anæsthetic lepra bear a very strong resemblance sometimes to the morphœa-patches. The other symptoms which invariably accompany the graver disease are sufficient to prevent all error. That the two phenomena should resemble one another is not surprising, their probable neurotic origin in morphœa, and their certainly neurotic source in lepra. Vitiligo is an affection of the skin-pigment alone; there is no other change in the integument. It ought not to be mistaken for morphœa.

Prognosis.—There is a considerable tendency toward spontaneous recovery during the hypertrophied stage: when atrophy has set in the skin can never return to its normal state. It is often extremely chronic, lasting for life.

Treatment.—Arsenic, exhibited for long periods of time, and pushed to the maximum dose the patient will bear, together with the galvanic current, has seemed to be useful. Tonics, iron, cod liver oil, and general hygiene are undoubtedly of importance. Some cases have made good recoveries without treatment, as occurred in a case I have had under observation the last three years.

It is perhaps proper to mention here a localized form of

atrophy in which the process is deeper-seated than in morphœa, but seems to be closely related to it. I allude to the affection known as *hemiatrophia facialis*, or unilateral atrophy of the face. Not only the skin, but the subcutaneous connective-tissue, the muscles, and even the bones of the whole or a part of one side of the face are involved. In some cases characteristic morphœa of other regions has been observed in connection with it. The affection belongs more probably to the department of neurology, and merely requires mention here.

ELEPHANTIASIS.

Syn.—Pachyderma; e. arabum; bucnemia tropica; elephant leg; Barbadoes leg.

Definition.—A circumscribed chronic hypertrophy of the skin and subcutaneous tissue, due to local circulatory disturbances from repeated vascular and lymphatic obstruction, due to inflammation, erysipelas, and perhaps embolism by filaria sanguinis or its ova, and appears as an immensely enlarged, thickened, indurated, pigmented condition of the skin of a part—usually a limb.

Symptoms.—The disease occurs everywhere—but with such especial frequency in some parts of the world as to appear almost endemic there. This is especially the case in certain tropical regions—the West Coast of Africa, Brazil, the West Indies, and especially India; it is also moderately common in the Mediterranean regions and Arabia. Barbadoes leg is a name given to its commonest form from its frequency upon that island. Elsewhere it is a rare disease.

Pachyderma, or elephantiasis, occurs on various parts of the body, but affects pre-eminently the leg and the genital organs. Only exceptionally does it appear upon the nose, ears, cheeks, back, etc. Two main forms, elephantiasis cruris and elephantiasis genitalium are to be described.

In both forms the disease begins with a series of inflammatory attacks in the skin of the affected part, which may have their starting point in some local lesion, wound or scar, or

may occur in apparently perfectly healthy skin. These attacks may be of erysipeloid, or of a deeper dermatitis character, or they may consist only of a painful erythema. Fever, swelling of the skin, pain, redness, lymphangitis, or even phlebitis, accompany the attack. After lasting a variable time it subsides, to reappear shortly, either spontaneously or from some such cause as induced the first onset. Each attack leaves the skin somewhat swollen—the lymphatic glands somewhat enlarged. (It will be remembered that, when speaking of erysipelas, it was noticed that repeated attacks were liable to leave the part in a permanently hypertrophied condition). In the course of a year or two the repeated inflammations have increased the size of the part considerably ; the skin and lymphatic glands present in slight degree the characters to be described of the fully developed disease. Eventually a stationary period is reached, in which the erysipelatous attacks no longer occurs, and the patient is left with the permanently deformed part.

E. cruris is the commoner form of the disease in this continent, and forms the well-known Barbadoes leg. In the course of years, perhaps five or ten, the limb has become uncommonly swollen from the soles of the foot to the upper part of the thigh. All the natural contours are entirely obliterated ; the foot, leg, and thigh are "bolstered" with a tremendous misshapen mass of dark, tuberculated skin. The leg may measure seventy centimetres or more in circumference—and the foot and thigh are equally enlarged. Hence the well-merited name of rhinoceros leg and elephantiasis. The surface of the skin covering this enormous limb is dry, studded with tubercles, or perhaps smooth and shining, and of a dirty black color from pigment deposit and decomposed sebaceous and epidermic remains. The epidermis is at places smooth as parchment (e. glabra)—or scaly ; but in its most characteristic condition it is irregularly warty or tubercular, the tuberosities being moist and foul, or dry and brush like (e. tuberosa, s. verrucosa, s. papillaris). Excoriations, superficial or deep ulcers with callous edges and foul necrosing base, add their

secretions to those of the eczema which is usually present in places.

All the tissues of the limb seem to be matted together into one hard mass. The muscles cannot be distinguished, and in bad cases even the bones, as the tibia, are enlarged and send rough processes into the sclerotic mass. The ulcerations may be so deep as to destroy fascia, muscles, and even bone.

A prominent feature of the disease is the involvement of the lymphatic vessels and glands. These latter are swollen from the beginning, and attain an enormous size in the later stages. The vessels are prominent, thick, hypertrophied, and filled with lymph. Occasionally they burst, and a more or less constant lymphorrhœa—a trickling away of the lymphatic fluid over the tubercular, ulcerated, cracked surface, already sufficiently obnoxious from the decomposing secretions and abundant remains of epidermis and sebum occurs.

As a usual thing, only one leg is affected; certainly in the severest forms; many authors, however, mention a double elephantiasis.

E. genitalium (s. scroti, penis, labiorum pudendorum et clitoridis), is the other most common form of the malady. Here the hypertrophy is even more enormous at times, and it certainly is even more unendurable to the unfortunate possessor than is e. cruris. The scrotum and labia, are most commonly affected, and from them tumors of really stupendous size may grow. Those of the scrotum are the largest of all. Thus Clot-Bey removed one weighing one hundred and ten pounds, and as great a weight as one hundred and twenty pounds has been recorded by Prosper Alpin and Larrey. The clitoris and labia have been known to grow to growths weighing fifty to sixty pounds. Some of these tumors are so large as to reach below the knees, even to the ankles of their unhappy possessors.

The disease begins as a hard lump in the testicle or labium, which gradually grows in size and hardness under the attacks of erysipelas before mentioned. Gradually the skin of all the surrounding parts is drawn into the tumor, until all the geni-

tals, the thighs, and the lower part of the abdomen are involved. The penis gradually disappears as the sheath becomes involved, and is eventually represented by a funnel-shaped orifice, from the ulcerating mouth of which the urine exudes, and deep down in which is the glans; the ostium vaginæ, and clitoris disappear in the same way. The tumor itself forms a mass covered, like the leg, by an immensely hypertrophied epidermis. It may be elastic to the feel, but is usually hard and knotty. The skin is rough, hard, tuberculated and warty; its color varies from a light to a blackish-brown. Fissures, ulcerations of varying depth, secondary eczema, etc., occur here also. Vesicles occasionally form, from which, after breaking, lymph may drip for days; or the lymphorrhœa may occur from direct bursting of the overfilled lymphatic vessels.

Such monstrous growths are of course in the highest degree obnoxious from their size alone; but Rayer states that among the Arabs the impossibility of gratifying their sexual desires forms not the least important part of their sufferings. Patients suffering from quite advanced degrees of this affection have been known, however, to procreate; and it is probable that the function of the testicle is not interfered with.

Besides these places, elephantiasis occurs, though rarely, upon other portions of the body. Thus after recurrent facial erysipelas, it may appear as permanent thickening of the ears, lips, and cheeks. It has also been known to happen upon the arms, back, etc.

The subjective symptoms may be described in a few words. The inflammatory attacks at the beginning give the ordinary symptoms, and when the permanent thickening has occurred, the patient complains of a feeling of tightness, with occasional neurotic pains. Later, there is the permanent sense of weight and "deadness" of the limb.

Pachyderma is almost invariably seen between the ages of twenty and forty, though Schwimmer mentions a case occurring in a boy of twelve years, who, after three years of the disease, measured forty centimetres around the ankle. There

was formerly a case in the Dermatological wards of Charity Hospital at least seventy years old.

There remains to be mentioned certain so-called forms of elephantiasis which probably belong more appropriately under other headings. Thus some described cases are more properly called molluscum fibrosum, and others, in which a vascular new growth formed a large part of the tumor, will be described among the nævi under the title of elephantiasis telangiectodes.

Anatomy.—The essential point in the pathology of elephantiasis is the lymphatic obstruction, though we are still uncertain as to its exact cause. Very early in the disease the lymphatic glands are swollen, the lymphatic vessels prominent and surcharged with fluid. In consequence of the repeated attacks of inflammation, there is set up a stagnant œdema, and consequently a new growth of connective tissue in all parts of the skin. Virchow lays stress upon the fact that it is not a fluid from the abnormal bloodvessels, as in inflammation, but one coming from normal vessels from mechanical causes (glandular obstruction). It is a true lymphatic œdema, and the abundant active leucocytes it contains not only directly become connective tissue corpuscles, but induce also a hyperplasia of the fixed cells already present.

Microscopically, a more or less fully developed connective tissue is found in all the parts of the cutis and epidermis, but especially in the papillæ. So abundant is this fibrillar growth that all the other structures of the skin and deeper parts are pushed aside, pressed upon, and atrophied. The glands are deformed, or destroyed ; those that remain have their endothelium granular and swollen; the fat is atrophied; the muscles are discolored and have undergone fatty degeneration. The bloodvessels themselves are thrombosed, and have thickened walls. The lymphatic system is enlarged throughout, the vessels are swelled and filled with lymph ; the lymph spaces enlarged and in places dilated.

The macroscopical appearances corroborate the minute findings. Bands of connective tissue are everywhere evident as we cut through the hypertrophied mass. All the subcutane-

ous tissues are matted together into a homogeneous, lardaceous mass, from which a yellowish fluid, the lymph, trickles abundantly upon pressure. Vessels, nerves, muscles, can hardly be distinguished; only the fatty mass with bands of more fully formed connective tissue running through it. In some places the connective tissue is older, hard, almost schirrhous (e. dura); in others it is newer and gelatinous (e. mollis). Enlarged lymphatic vessels and lymph lacunæ are found throughout. Even the bones may be thickened. Though the nerve-sheaths frequently suffer, the nerves themselves usually escape degeneration.

Etiology.—Elephantiasis is due to inflammation and obstruction of the lymphatics. What the cause of this obstruction is, is not absolutely known, but it is extremely probable that it is due to the presence in the lymphatic vessels of a minute animal—the filaria sanguinis, and its ova. These are microscopic little thread-worms, which have been found adhering in immense numbers to the walls of the lymphatics and bloodvessels in this disease. They are to be found in numbers only during certain hours of the day. It is believed that they and their ova cause bloodvessel and lymphvessel embolism and stasis; proofs that this is the correct etiology of the disease are continually accumulating from the countries where it is common. Other diseases, such as lymph-scrotum, are looked upon as related to pachyderma, and are thought to be due to the same causes; they are spoken of as the filaria diseases. According to Manson, a certain species of mosquito is said to be instrumental in propagating the filaria and communicating the disease.

In the light of these facts, we may cast aside at once all the theories which have made elephantiasis dependent upon atmospheric or teluric influences; but there must be mentioned certain secondary or contributing causes. Thus anything which causes inflammation or current stoppage in the lymphatic or vascular system of the skin might tend to produce the malady. Thus repeated erysipelas, chronic ulcers, chronic eczemas, dilatations or obliterations of the vessels, varices,

thromboses, etc. Syphilis and lupus may cause such extensive vascular obstruction in the skin as to occasion the disease; Schwimmer mentions the case of lupus upon the buttock of ten years standing, in which there ensued a high degree of pachyderma of both legs, the hypertrophied skin being studded over with numerous lupus nodules.

In the countries where it is common, the disease occurs far more frequently among the poor than among those who are well cared for. The Chinese attribute it to exposure, especially to wading in the icy streams in early spring. It is not a contagious disease, nor is it proven to be hereditary.

Diagnosis.—The diagnosis can hardly present any difficulties in a disease which shows such marked features. Certain cases may be hard to distinguish from, and in fact may be transition forms between it and molluscum or dermatolysis.

Prognosis.—Elephantiasis is always a very serious, though but seldom a fatal disease. The mere fact of having to carry about so disgusting and so disabling a deformity, causes considerable mental disturbance. Hebra has seen several cases perish from pyæmia, but as a usual thing they learn to accommodate themselves to their increasing burden, and live for many years. Hendy maintains that spontaneous cure occasionally occurs in the earliest stages.

If treatment is vigorously pursued during the earlier stages of the disease, there may be a hope of cure; later but little can be done save to alleviate the trouble; over fully formed connective tissue so widespread in situation, medicine and surgery have but little power.

Treatment.—The early attacks of inflammation are to be treated in exactly the same way as we would treat ordinary erysipelas. Rest in bed, hot or cold applications, lead and opium wash, etc. Quinine and iron internally may be employed.

In the case of e. cruris, we may endeavor by various means to diminish the œdema left by the first onsets of inflammation. Local blood-letting, opening of the saphenous or femoral vein, will hardly be recommended to-day, as the consequent weaken-

ing of the system rather predisposes to the occurrence of transudations. But multiple scarifications, as recommended by Lisfranc, either alone or with methodical compression of the entire limb, may be of service. A rubber or ordinary bandage is to be firmly and evenly applied from the toes to the thigh ; in the beginning it must be reapplied often, even several times daily, so as to maintain continuous pressure. Complete rest and elevation of the limb must be insisted on during the treatment. Inunctions of iodine or mercurial ointments, vapor-baths, etc., may be used from time to time to soften the skin and assist absorption. By these means not only can the lymph be drained from the part, but much of the new connective-tissue be made to undergo reabsorption ; and Schwimmer says that in his hands this treatment continued for months has caused the disappearance of infiltrations an inch or more in thickness.

Various efforts have been made to influence the growth of the connective tissue by surgical interference with the vascular or nervous supply. As long ago as 1851 Dr. Carnochan, of this city, cured an advanced case of the disease by ligation of the external iliac artery. Leonard, a short time ago, collected 69 cases in which this arterial ligature was performed, with recovery in 40 and benefit in 13 cases. Some of the patients succumbed to pyæmia, and in the others the malady reappeared in other parts ; but on the whole the records have been very favorable, and the operation is to be looked upon as a valuable means of relief. Digital and instrumental compression have yielded almost as good results. Morton, in a case of fourteen years' standing, in which the external iliac had been fruitlessly ligated, excised a portion of the sciatic nerve, and within six weeks saw the limb reduced to one-half its former size.

Quite recently the use of the constant current has been claimed to give good results in the treatment of pachyderma. Two Brazilian physicians, Moncorro and Silva Aranjo, have reported astonishing results from the use of the current of from six to sixty elements, continued for periods of

one to two years. E. C. Mann has reported a case in which galvanism reduced the limb from 25 to 17 inches in 3½ months. Seventeen cells were used.

In otherwise hopeless cases, amputation, though dangerous, offers a chance of relief.

E. genitalia is only to be treated by operative procedure. Gaetam-Bey has systematized the operation, and the most enormous masses have been successfully removed by the knife. Details of the operative procedures will be found in the surgical text books.

Ulcerations, eczematous processes, warty growths are to be treated by ointments, caustics, etc., upon general principles. The general health must be carefully looked after, and any thing tending to produce additional congestion or œdema of the limb, most carefully avoided. Change of climate is one of the most valuable therapeutic measures at our disposal during the early stages of the malady.

DERMATOLYSIS.

Syn.—Pachydermatocele; elephantiasis telangiectodes (Hebra, Kaposi); cutis pendular.

Definition.—A more or less circumscribed hypertrophy of all parts of the integument and subcutaneous tissue; the skin is thickened and redundant in places, and hangs down in loose folds.

Symptoms.—Dermatolysis consists simply in a redundancy of the normal skin. It occurs in various situations, but has been found most often and most extensively affecting the skin of the abdomen, back, thighs, and scalp. The hypertrophy which is the cause of the disease is general over the area affected; the glandular stuctures, the connective tissue and muscular fibres, as well as the subcutaneous areolar tissue are involved. Even pigment is deposited in excess. The surface of the skin is uneven, for the natural folds and rugæ are magnified; but it is smooth to the touch, and shows none of the rough tuberous elevations which characterize elephantiasis.

The skin is usually more or less brownish-black in color from excessive pigmentation.

Wherever it occurs the integument is superabundant and hangs down in folds of greater or less extent; they may overlap one another, or envelop the lower parts as with a loose garment. John Bell gives a graphic account of a remarkable case, in which there was an enormous development of the skin of the abdomen and breast. The growth hung down from her ears and neck, and involved all the skin of the abdomen and trunk below. The enormous mass, the author says, "rolls out like bowels when she opens her tattered clothes; the rolls of skin, fleshy and red, turn over one another and are set in vermicular motion by the slightest touch, and form a sight at once disgusting and horrible; she carries the tumor before her, slung in an old table cloth, when she walks, as a sower does a bag of corn." In Keen's case, the disease began upon the neck and shoulders, and hung down like a cloak to the buttocks. With all this the skin is normal in consistency, soft and pliable to the touch.

Erasmus Wilson, to whom much of our knowledge upon this subject is due, describes as cases of dermatolysis those congenital deformities in which, from a partial absence of the usual amount of subcutaneous connective tissue, the integument can be moved to a surprising extent upon the deeper structures, with which it is only very slightly connected. Thus, in the case of Georgius Albes, the skin of the right side of the body seemed to be made of India rubber; the skin of the right breast could be drawn to the left ear, and that under his chin extended until it touched the vertex. The left side of his body was normal. The so-called "rubber man" who was lately exhibited in New York City was an example of this deformity, general over the body; the skin could be drawn into the most extraordinary shapes, but immediately returned to its proper position. This mobility of the skin is due to an absence, to a very large extent, of the subcutaneous areolar tissue, and a consequent increase in the amount of motion usually possible for the skin upon the deeper parts, and appears to be a congenital

deformity. The integument itself is not altered in any way; there is no hypertrophy of it; and there is certainly no hypertrophy of the subcutanea. It is simply a congenital deformity, and ought not to be classified with the acquired and progressive hypertrophies of the cutaneous and subjacent tissues before mentioned.

By the German writers dermatolysis is classified under the head of pachyderma or elephantiasis arabum. The lesions are very much the same, but the appearance and course of the two diseases justify us in following the majority of English authorities, and considering them as distinct. One form of simple hypertrophy of the skin, accompanied with marked new growth of vascular tissue, has been considered among the nævi under the head of elephantiasis telangiectodes.

Dermatolysis may be multiple or single. It is sometimes congenital, but usually begins to grow during early life; its increase may be rapid at first, but it becomes stationary or nearly so later on. In Bell's case the disease had begun during middle life, and had been five years in existence at the time the description was written. It is injurious to the general health only on account of its size.

Anatomy.—All parts of the integument partake of the hypertrophy, but the subcutaneous connective tissue is affected most of all. We are entirely in the dark as to what causes the exuberant growth of the dermic and subdermic tissues. As before stated, certain cases of telangiectasis, in which the connective-tissue new growth is prominent, occupy the border-land between that disease, dermatolysis and elephantiasis. They are called by Kaposi elephantiasis telangiectodes. Dermatolysis is also closely related to molluscum fibrosum.

Diagnosis.—From the above-mentioned forms of telangiectasis the disease may be distinguished by its non-compressibility and the evidently essentially vascular character of the latter growth. Elephantiasis may be differentiated by the roughness, tuberculation, hardness, ulceration, and lymphorrhœa which distinghish it from the normal consistency and appearance of the skin in dermatolysis.

Prognosis.—Is good. The disease is only hurtful in so far as it is a deformity or impedes locomotion. Operative measures have yielded good results.

Treatment.—Excision is the plan which is indicated, and it has given very good results, especially when the disease is not very extensive. The galvano-cautery may be applicable to some cases.

HIRSUTIES.

Syn.—Hypertrichosis; hypertrichiasis; polytrichia; hypertrophy of the hair.

Definition.—An abnormal increase in the size and length of the hair.

Symptoms.—Hirsuties is either hereditary (hirsuties adanata), or acquired (hirsuties acquisita). It may also be general (h. universalis), or local (h. partialis). The general cutaneous surface, with the exception of the palms of the hands and soles of the feet and the dorsal surfaces of the terminal phalanges of the fingers and toes, is provided with long or short hairs. The scalp, eyebrows, axilla, pubis, lower part of face of adult males, have normally thick and long hairs, whilst the rest of the body has lanugo hairs. Hirsuties includes all cases of increase in size or number above the normal of the hair of the body.

The hair may be of the average thickness, or coarser, or finer, with increase of the length. Following Beigel, we may describe three forms of abnormal growth of hair:

First. An increase in the size or length of the hair on places normally provided with coarse hair, as eyebrows, scalp, etc.

Examples of inordinate growth of the hair of beard or scalp are very frequent.

Second. When there is an inordinate growth of hair in women and children in situations usually occupied by lanugo hairs, but in males by coarse hair.

Some children are born with a more or less developed beard, and in women, especially at the climacteric period, the

hair frequently grows to a considerable length and thickness on the upper lip and chin. This same abnormal growth of hair on the lip and chin is sometimes seen on younger females suffering from menstrual difficulties. Finally, a number of cases have been observed of females with well developed full beards; more or less marked examples of these latter are frequently seen in our dime museums.

Both of the above forms are local.

Third. There is an increase in the size or length of the hairs over the whole body, or on certain parts; it may be either congenital or acquired. Examples of congenital hirsuties of this form are seen in the cases of the so-called hairy men found in some eastern countries. These cases are generally congenital. Deficient development of the teeth is a marked feature in some of these cases. Acquired hirsuties from lanugo hairs is always local. Examples are found in the case of hairy moles (nævus pilosus). These are found especially on the scalp or forehead, and contain short, stiff, or long hairs.

When the hairs take an abnormal direction, as occurs on the scalp or eyebrows, the condition is called trichiasis.

Etiology.—The condition may be either congenital, acquired, or hereditary. It occurs more frequently in dark than in light persons; has been observed to follow nerve injuries, and to occur on those parts of the skin which have been in a condition of subacute inflammation for a lengthened period, and in which increased amount of nutrition has been carried to the part. It is thus seen after fractures of bones, and in connection with chronic eczema of the scalp; or follows the use of irritants to the skin, as vesicators, rubefacients, etc.

It appears during the climacteric period in females and in younger women suffering from uterine trouble; temporary hirsuties has been observed to occur during pregnancy, and to disappear after parturition when the menses have been re-established.

Treatment.—General hirsuties does not admit of treatment. If only small areas are affected, the hairs can be removed by shaving, by caustic, or by electrolysis. The question of shav-

ing need not be here discussed. I prefer cutting the hair closely with a pair of scissors, as there is less irritation of the skin produced, and consequently less nutritive material brought to the hair follicles, and a less rapid growth of the hair.

Depilatories can be used to destroy the upper part of the shaft of the hair, if a fairly large area is to be acted upon. They all act as caustics, and destroy the hair and shaft as deep down as the neck, but the removal is not permanent, and after two or three weeks requires to be repeated.

The substances generally used are the sulphide of arsenic, sodium, barium, or calcium ; these are made into a paste and laid on the part as a thin coating for ten or fifteen minutes, or until there is a feeling of heat in the skin, when they are to be removed and the part washed with water, and powdered and rubbed with oil. Duhring recommends a sulphide of barium paste prepared as follows : ℞. Barii. sulphidi, ʒ ii., pulv. zinci. ox., pulv. amyli, āā ʒ iii. M. This to be mixed with water to form a paste, and applied in the manner already described.

If the number of hairs to be removed is not too great, destruction of the hair follicle by means of electrolysis, as originally suggested by Michel and Hardaway of St. Louis, is the best method of removing hair, as it does its work effectually and without producing visible scars.

It requires much time and patience, and sometimes produces considerable pain, especially in hirsuties of the upper lip ; only the larger hairs should be removed, and if the hairs are closely seated, only a certain munber should be removed at one sitting, and these should be removed some distance from each other, because, if a number of closely seated hair follicles are destroyed, the resulting inflammation and destruction of tissues may be sufficient to produce visible scarring.

The operation itself is easily performed with or without the use of a lens. A fine needle is passed into a hair follicle to its base and connected with the negative-pole of a galvanic battery of from six to fifteen cells, and the circuit completed by the patient holding a sponge electrode in the hand. The needle is held within the follicle until the hair becomes quite

loose, when it is removed before breaking the circuit. Sometimes the operation must be repeated subsequently, as the follicle base is not always fully destroyed at the first sitting.

ONYCHOGRYPHOSIS.

Syn.—Hypertrophy of the nails, onychauxis.

Definition.—An increase in the size or thickness of the nail, from any cause.

Symptoms.—Hypertrophy of the nails may occur as an idiopathic disease, or as a consequence of some affection, or in connection with other diseases. The nail may be increased in size, either by increase in its length, breadth, or thickness, or all combined. A nail may be long and of normal width, direction and constitution ; or thin and brittle ; or broad and thick, uneven, and degenerated ; or simply broader and bent or curved at the sides.

Nails in which onchogryphosis has occurred, that is, in which there is an increase in the size and thickness of the nail from an excessive formation of nail substance, are usually long and do not break off easily. The surface is uneven, has furrows and ridges, and appears as if composed of many lamellæ.

Sometimes nails are deformed, discolored, curved, twisted, conical, or cubical in form, bent forward, or elevated from their bed. When they are broader and curved at the sides, they generally irritate the tissue sufficient to produce an inflammation—paronychia.

Sometimes the nail is detached from its base by collections of a dirty, brownish, lamellar mass beneath ; the bed of the nail is then shortened, thinned, and the nail furrowed and ridged.

The nails of the large toes are the most frequently affected, and those of the fingers least.

Hypertrophies of the nails are met with in eczema, lichen ruber, ichthyosis, syphilis, etc. In syphilis the change is caused by syphilitic infiltration of the matrix. The nailifold becomes of a brown or reddish color, and the infiltration usually extends

to the surrounding tissue, producing redness, swelling and ulceration.

In eczema, psoriasis, lichen planus, and onchomycosis, the nails are thickened, brittle, and very uneven on the surface.

Anatomy.—In pure hypertrophy there is no change in the structure. In excessive and chronic forms the papillæ of the matrix are enlarged and the bed of the nail hypertrophied. In those cases in connection with eczema, etc., there is degeneration of the nail substance, and on that account should not be classed among the hypertrophies.

Treatment.—As the nail grows from the matrix our efforts should be to produce a healthy condition of this latter structure. All sources of irritation should be removed, pressure from tight shoes prevented, and the nails be properly trimmed. If a chronic inflammation is present it should be treated by proper ointments, application of iodine, etc.

Deformed, thickened, curved nails may require the use of scissors, or even a saw to remove the superabundant mass. If the sides of the nail are curved in too much, and cause inflammation, they should be treated by the daily application of cotton and charpie between the nail and skin-fold, by which means the nail will gradually be brought to its proper position. Such nails should always be trimmed by cutting them transversely and not circularly. If the deformity depends upon other diseases than those of the matrix alone, as in eczema and psoriasis, these conditions must be cured before the nail can regain its proper shape.

CLASS VI.

ATROPHIÆ.

Under the term atrophy of the skin are included those conditions characterized by simple, numerical or degenerative atrophy of the elements of the skin without a proportionate substitution by new elements of similar physiological value. In simple atrophy there is a diminution in the size ; in numerical atrophy a diminution in the number ; and in degenerative atrophy a change in the quality of the normal elements of the skin.

Congenital deficient formation of some of the elements (albinismus), though strictly not an atrophic affection, is placed in this class owing to the similarity in the resulting pathological condition with numerical atrophy of the same elements.

As in the hypertrophies, the atrophy can effect exclusively or principally certain elements of the skin, the pigment, cutis, hair or nails. This class of diseases is consequently divided into the following groups : atrophy of pigment ; atrophy of connective tissue ; atrophy of hair, and atrophy of the nails.

ATROPHY OF PIGMENT.

Achromatia, leucoderma, leucopathia, denotes the absence, either in patches or over the whole surface, of the normal pigment of the rete Malpighii and hairs. Where the pigment is absent the structures appear of a milk-white or gray color. Atrophy of the pigment of the epidermis is either congenital (albinismus), or acquired (vitiligo).

ALBINISMUS.

Syn.—Congenital achroma ; congenital leucopathia ; congenital leucasmus.

Definition.—Congenital absence of pigment in the skin.

Symptoms.—Albinismus may be general, that is, present over the whole body, when it is called "albinismus universalis;" or limited in extent, occurring in isolated patches—albinismus partialis or leucopathia. Those individuals in whom it is universal are called albinoes. In these persons there is more or less complete absence of pigment in the skin, hair, iris and choroid. The pupils appear red, the skin is of a milky white or of a reddish tinge, and the hairs of the whole body fine, soft, silky, and generally either of a clear white or yellowish-white color. Owing to the absence of pigment in the choroid and iris, and consequent non-absorption of transmitted rays, the eyes are very sensitive to light; with a bright light photophobia is present; the pupils contract and dilate continuously and sight is better by a dim than by a bright light. The absence of pigment in albinoes continues throughout their whole life. These people are generally of short stature, and physically and mentally below the normal standard. The pulmonary organs are supposed to be especially predisposed to disease.

Etiology.—The cause of the deficient development of pigment is not known. It is met with in all races and in all climates, but is most frequent among the negroes of warm countries. Normally pigmented individuals can produce albinoes, but it is not known if albinoes can generate albinoes.

Albinismus partialis appears more frequently in the colored than in the Caucasian race. This form of albinismus consists in the existence of one or more non-pigmented, whitish or pinkish-white spots of various size and shape, though generally limited in extent and more or less circular in form. They may be present upon any part of the body, are generally irregularly situated, but sometimes arranged symmetrically or follow peripheral nerve distribution. They are most frequently present upon the genital region, hairy part of head and face, nipples, back of hands and fingers. The eyes are not affected. The hairs existing upon the patches are often white.

The patches seldom undergo change during life, but sometimes they increase in size, and may even extend so as to cover a large area of surface, or new patches may appear in previously

normal skin. Sometimes the patches assume their proper color from a re-deposit of pigment. The hairs change their color as a rule, and become white, or white hairs appear upon normally pigmented skin (leukosis canities). The patches are normal in every respect excepting that of pigmentation, and the remaining skin is normal in character.

Partial albinismus is frequently, though not always, inherited, and only one of a family may be affected. Cases of semi-albinismus have been described as occurring in Africa; the complexion in these persons is *café au lait*, the hair a dull yellow, short, kinky, and the pupils light brown.

Treatment.—There is no known means by which pigment can be permanently produced in cases of albinismus.

VITILIGO.

Syn.—Acquired leucoderma; acquired leucopathia; acquired leucasmus; acquired achroma; piebald skin.

Definition.—Vitiligo consists of one or more round, oval or irregularly shaped, sharply limited, smooth white spots, which tend to continuously increase in size, and are generally surrounded by abnormally darkly pigmented skin.

Symptoms.—The disease occurs more frequently in men than in women, and is rare in children. It begins as one or more non-pigmented, white, circular, sharply limited spots which continue to increase in size at the same time new ones make their appearance. In that they increase in size, they may change their form and become angular, etc. Their surface is smooth, without scales, and on a level with the neighboring skin. The skin of the spots is unchanged as regards its resistance, thickness, structure, temperature, sensation or its secretory functions. Their outlines are sharply defined and are almost invariably surrounded by abnormally darkly pigmented skin, which gradually passes into the normally pigmented beyond. This increased pigmentation in the immediately adjoining skin is, when present, characteristic and striking, but is not a constant feature of the disease.

The affection is very chronic in its nature; in the course of months or years the patches increase rapidly or slowly in size and number, and may occupy the greater portion of the cutaneous surface. From their manner of spreading peripherically the white spots generally have convex borders, and the surrounding darkly pigmented skin concave borders toward the white patches. At first, on account of the small size of the vitiligo patches, the most striking appearance on the individual is the white spots; afterward if the non-pigmented spots cover a greater area than the rest of the skin, then the pigmented spots are the most striking feature and may be easily regarded as the abnormal condition. Frequently neighboring spots coalesce by extension, and the patches then assume a gyrate form. The contrast between the white spots and the surrounding darkly pigmented skin is greater in summer than in winter on account of the increased pigmentation of the latter at that time.

FIG. 54.—Leucoderma in a colored woman.

The accompanying illustration, for which I am indebted to

Dr. Johnson of Wilmington, N.C., shows well-developed leucodermic patches.

The spots frequently originate in the immediate vicinity of a pigmented nævus or of a brown wart, or they commence on the forehead, hairy portions of the head, back of the hands, genitals or mons veneris.

The hair upon the vitiligo spots is generally white and if seated upon the hairy scalp the white tuft in the surrounding black hair is very conspicuous. Apart from the absence of pigment, the skin always remains, as far as can be observed, perfectly normal, and the general condition of the system is unaffected by the disease.

Non-pigmented spots are met with as consecutive conditions of some other morbid states of skin, for instance in morphœa, scleroderma, lepra, furunculosis, variola, lupus, ulcerations, broad condylomata, gummata, pressure, etc. These are not true idiopathic vitiligo spots, and will be described in connection with the disease by which they are produced.

Anatomy.—The only changes which have been observed in the skin are, an absence of pigment in the white patches, and an increase of pigment in the surrounding abnormally dark skin.

Etiology.—Vitiligo appears more frequently in negroes, and in warm climates. It appears most frequently in middle life; is more frequent in men than in women, and is rare in children. It attacks robust as well as ill-nourished persons. In some cases disturbance of general innervation, the result of exhausting diseases, causes its appearance. In the majority of cases the etiology is unknown.

Diagnosis.—Vitiligo may be confounded with morphœa or lepra. In morphœa, besides the white spots, there are marked structural changes in the corium which are never met with in vitiligo, the skin in the latter being apparently normal in every respect except as regards pigmentation. In lepra white spots surrounded by hyper-pigmented skin are present. Sometimes the spots are of irregular shape, not sharply defined, and the skin is thickened and often anæsthetic.

Prognosis.—The patches generally increase slowly or rapidly through life until a large portion of the surface is changed. One or all of the spots may temporarily, or even permanently, cease spreading, and some few cases have been reported in which the skin has again become normal. This return to a normal condition is however a very rare occurrence. The disease has no effect upon the constitution, the only unpleasant result being the disfigurement produced when present upon exposed parts of the body.

Treatment.—The general condition of the system must receive strict attention and any functional derangement, more especially of the nervous system, demands its appropriate treatment. Arsenic should always be administered internally, and its use continued for some time. With reference to local treatment there is no known agent by which pigment can be permanently reproduced, or the spots hindered from extending, or the development of new spots prevented. By the application of substances which irritate or inflame the skin, as tincture of cantharides, croton oil, mustard blisters, and sulphuric acid, a patch can temporarily be colored brown. The newly produced pigment, however, soon disappears, and no new pigment is subsequently formed. As the only unpleasant feature of the disease is the disfigurement of the exposed portions of the body, this can be best remedied by the removal of the pigment from the brown patches. For this purpose those substances are made use of which have already been described when treating of chloasma ; for instance acetic, hydrochloric and nitric acids, potash, soda, ammonia, bismuth, white precipitate and corrosive sublimate. For the mode of application the reader is referred to the article on chloasma.

CANITIES.

Syn.—Poliosis ; trichonosis discolor (Wilson); grayness of the hair.

Definition.—Grayness or whiteness of the hair from diminution or absence of pigment.

Symptoms —Deficient pigment in the hair may be general or partial, hereditary or acquired.

Hereditary deficiency is seen in albinismus, when it is either general or partial. When general, there is absence of pigment in the skin also (general albinismus.) In hereditary partial canities the non-pigmented hairs may be seated upon pigmented or non-pigmented skin.

Acquired canities can be either physiological or pathological, that is, it may occur as the result of the normal physiological changes in the tissues, the result of advanced age—canities senilis ; or it may occur before the normal or proper time—canities præmatura.

Canities Senilis.—The period at which this form occurs varies in different persons but always takes place in the individuals who live to an advanced age. It generally commences on the temporal region, a few isolated hairs first becoming gray, then more and more, the area of grayness constantly increasing, until finally all the hairs of the head become changed. Those of the occipital region, at its lower part are generally the last to change. Sometimes the beard changes before the hair of the head. The hairs of the whole body finally change. Dark brown hair changes earlier than blonde. The skin of the affected parts retains its normal amount of pigment.

Canities præmatura.—Grayness of the hair before the normal physiological period may be either general or partial, extending over the whole head and beard or present only in patches. The color can vary from slight grayness to white. The first gray hairs often contain some pigment. Frequently a pigmented hair falls out and is replaced by a non-pigmented one. Individual hairs may be speckled, pigmented alternating with non-pigmented rings. This arises from the pigment being irregularly distributed by the papilla to the growing hair. Hairs always become gray at the bottom first, so that at the commencement of the process, the distal portion of the affected hairs is of the normal color and the inner part non-pigmented ; except in the case of the falling out of a pigmented hair and its substitution by a new non-pigmented one.

A follicle from which a gray hair has formed, generally produces subsequently only gray hairs, but sometimes, perhaps only after a long period has elapsed, partly or fully pigmented hairs are again produced. Hairs may be grayish in winter and darker again in summer (Wilson.) The skin at the seat of the canities is generally pigmented.

Etiology.—Canities depends upon a deficient production of pigment. The color of the hair depends principally upon the pigment contained in the fibrous portion of the hair shaft. If the peripheral layer of the hair shaft contains air and no pigment, whilst the central part is pigmented, the hair will appear to be white. The black, brown, or blonde color of hair depends upon the quantity and manner of distribution of the pigment. All the pigment comes from the papilla, hence in canities less pigment than normal is furnished by this structure. The conditions which interfere with the normal production of pigment are not always clear. Premature canities is often hereditary. Conditions interfering with the nutrition or innervation of the part, as seborrhœa, or with nutrition in general, as chlorosis, typhus, scarlatina, are sometimes followed by grayness of the hairs. Hair has turned gray after ligature of the carotid (Med. Chir. Trans., 1881. p. 252), and after injury to nerves. Grayness seldom occurs before adult life. Premature grayness is frequently hereditary. As the change in color depends upon a deficient supply of pigment, from the papilla to the hair shaft, hence grayness occurs only as rapidly in an individual hair as the time required for the physiological growth of the hair to the length of the gray portion. Whether hair ever becomes suddenly white from fright or anxiety is still a matter of dispute. Until positive proof is produced as to its occurrence we are justified on physiological grounds in doubting its possibility.

Prognosis.—Canities partialis is generally permanent. General premature canities is usually permanent, but sometimes the hair becomes pigmented again. Canities following typhus, chlorosis, scarlatina, may be only temporary.

Treatment.—As there are no known means by which pig-

ment can be furnished the hair from the papilla we must rely upon dyes to remedy the premature grayness. The objections to their use are the discoloration of the scalp, the dry, dead condition, as a rule, of the hairs from the application; and on account of the constant growth of the hair the necessity for frequent applications to the part next to the skin. The dye in most frequent use is probably the nitrate of silver in watery solutions of different strength according to the effect desired. The mode of application is as follows: first wash the hair with soap and water, then dry well and apply the nitrate of silver solution. To prevent discoloration of the surrounding skin, the latter should be washed with a solution of chloride of sodium. The sunlight soon changes the hair to a brown or black. Solutions of nitrate of silver and sulphuret of potash in varying strength according to the effect desired, the one solution to be applied directly after the other, are often used. All fat oils give a darker color to the hair; they can be used alone or as a pomade thus:

℞	Olei ovorum	20		ʒ v.
	Medull. ossium bovis.	20		ʒ v.
	Lact. Ferri	1	50	℈ i.
	Ol. Cassiae æth.	1		grs. xv.

Pfaff.

Kaposi gives the following formulæ for dyes:

To produce a black color.

℞	Argent. Nit.	1		grs. xv.
	Ammon. Carb.	1	50	grs. xxii.
	Ung. emoll.	30		℥ i.

℞	Argent. Nit.	1		grs. xv.
	Aquae destil.	60		℥ ii.
	Liq. Hydrarg. Nit. oxyd.	5		℈ iv.
	Spir. Resedæ	5		℈ iv.

℞	Argent. Nit.	5		℈ iv.
	Plumbi Acet.	1		grs. xv.
	Aquae Rosæ	100		℥ iii.
	" Colog.	1		grs. xv.

For a brown shade.

℞ Acid. pyrogall.	1	grs. xv.
Aq. Rosæ.	40	3 x.
Spir. Colog.	2	3 ss.

For coloring the hair black the Persians use the powder of dried henna plant and powdered indigo plant. The hair is first well washed with soap and water, then the powered henna is made to a thick paste with lukewarm water, and applied to the hair. This is left an hour, then removed with lukewarm water, when the hair will have assumed an orange or saffron color. Then the leaves of the indigo plant are powdered and made to a paste with water and applied. This second application is left one hour and a quarter and then removed by means of water. In a few hours the hair will have become black. If a light or dark chestnut brown is desired, take one part of henna and three parts of indigo, mix, make into a paste and apply. The longer the paste remains on the hair the darker will be the color. For a clear brown leave one hour, and for a dark, one hour and a quarter. (Polak quoted from Neumann.)

ATROPHIA CUTIS PROPRIA.

Definition.—Diminution in the bulk or quantity, generally both, of the elements composing the skin.

Symptoms.—Atrophy of the skin may be idiopathic or consecutive, diffuse or partial. Idiopathic atrophy may be diffuse or partial. As examples of the diffuse form, we have xeroderma and senile atrophy. As examples of the partial form are the atrophic lines and spots—striæ et maculæ atrophicæ. General idiopathic atrophy of the skin is rare, and according to Kaposi, is found under two forms. A case of the first form he describes as follows: "The skin of the face, ears, neck, shoulders and breast, to a level with the third rib, was tightly stretched, felt very thin and could with difficulty be raised in folds. The surface was smooth in some places, in others, desquamating or finely fissured, wrinkled, parchment-like and tightly stretched. Small and large freckle-like yellowish-brown spots

were present, and between them the skin was either normal or contained cicatrices like those following small-pox. Here and there were bright red, small telangiectases. The subcutaneous tissue was not specially diminished. Sensibility was normal. The skin on the rest of the body was normal. General health was good. It had commenced in early childhood and showed constant increase."

The disease may appear on other parts of the body, as the dorsum of the foot. It commences apparently, first, by dilatation of the bloodvessels and pigmentation, then destructive retrograde changes occur and cicitricial tissue forms; later, on account of the shrinking, rhagades, inflammation or ulceration may occur. If the eruption is seated upon the face, as it was in the case above reported, the nasal and aural orifices become contracted and ectropia is produced.

According to Geber, this form commences as a proliferation of the connective tissue of the corium and endothelial of the bloodvessels with subsequent atrophy, then destruction and consecutive pigmentation.

There is proliferation of the inter-papillary rete, and degeneration of glandular epithelium.

The prognosis is unfavorable.

Treatment.—This consists in relieving the subjective symptoms, pain, dryness of the skin, and attention to any rhagades or ulcers which may form.

In the second form of the disease the affection extends from the middle of the thigh to the foot, more rarely does it occur upon the arms ; the skin is white, stretched, difficult to raise in folds, and the epidermis is thin, wrinkled and desquamating. On the tips of the fingers, palms of the hands and soles of the feet, the sensibility to pressure is very great on account of the absence of the protecting epidermis. This form remains stationary from childhood, and the treatment is purely symptomatic.

Senile atrophy.—This condition of the skin is the result of old age and the structural change may be that of simple atrophy, or of the nature of a degenerative process, or of both combined.

In simple atrophy the skin is thin, the surface sallow, dark-brown in color, dry and scaling (pityriasis tabescentium).

The anatomical changes are as follows : The epidermis is thin, the papillæ small or absent, the corium is thin, and its bloodvessels are partly destroyed or dilated. The hair is fine or absent. The sebaceous glands are dilated in places and the epithelium degenerated. The fat cells of the subcutaneous tissue are soft or absent.

In the degenerative form the connective tissue undergoes an amyloid, colloid, waxy or fatty degeneration.

Glossy skin.—This condition is secondary to some disorder of nervous system, and is the result of impaired nutrition of the part. It follows wounds, intractable neuralgias and other lesions of the nerve trunks. It may occur also in progressive muscular atrophy. The skin has a purplish, reddish, smooth, shining and glossy appearance, like in chilblains; the hair of the part usually falls out ; the natural lines of the skin disappear ; fissures and excoriations may be present, and a burning pain.

Striæ et maculæ atrophicæ.—This consists in the formation of lines or spots of atrophied tissue, and is either idiopathic or symptomatic.

The idiopathic form appears as lines, streaks or spots, but most frequently as lines ; these lines are one to two inches in length ; the spots are roundish or ovalish in shape, and from pin-head to finger-nail in size ; at first they are erythematous in appearance, and afterward resemble scars ; they are smooth, glistening, of a whitish, grayish or mother-of-pearl color and depressed beneath the general surface. The lines are parallel with each other, run in an oblique direction, and there are usually several in the same region. Spots, when present, are usually isolated.

The atrophy may occur on any part of the body, but is most frequent on the buttock, around the pelvis and on the thighs, and is rare on the body, neck and arms. The spots appear equally on both sexes, at all periods of life, last many years, and cause no inconvenience.

The changes which occur in the skin are similar to those

already described as occurring in general atrophy; there are first changes in the bloodvessels, then atrophy of the epidermis, corium, subcutaneous tissue and the bloodvessels.

In the symptomatic form the atrophy may be simple, or of a degenerative nature; simple atrophy is caused by pressure upon the tissues, leading to their atrophy, rupture or inflammation.

If the extension of the tissues is temporary, as occurs in pregnancy, then atrophic lines result.

In symptomatic degenerative atrophy the same changes occur in the skin as in senile atrophy.

The usual cause is chronic inflammation and new growth formation in the general surface. It may also arise from chronic eczema, pemphigus, pityriasis rubra, etc.

ALOPECIA.

Syn.—Calvities.

Definition.—Alopecia consists of a partial or complete deficiency of hair due to a variety of causes.

Under the designation of alopecia we include not only those more marked forms of baldness affecting the hair of the head, beard, eyebrows, etc., but also those partial losses of hair known as effluvium pilorum, or madesis, etc. In a large majority of cases the hair of the head alone is affected; in rarer instances the disease attacks the beard and eyebrows; and very exceptionally it invades the hair of the genital and pubic regions, the axillæ, etc. Cases of baldness have also been noticed in which the hair of the entire body, even the lanugo, hairs has been affected.

Certain varieties of baldness are not properly classified under the head of simple alopecia, and by their exclusion the field of the disease is considerably narrowed. Alopecia areata is important enough, and is possessed of enough points of distinction to merit a separate mention. The baldness that occurs in ringworm and favus is secondary and symptomatic, and will be fully described under the heading of these diseases. Lastly,

alopecia furfuracea is the direct result of seborrhœa, and has been considered with it.

There remain for consideration various forms of baldness, some hereditary and some acquired. It will be appropriate to mention the causes and symptoms of the several varieties separately, and then to consider collectively their prognosis and treatment.

1. *Alopecia Adnata.*—Congenital alopecia may consist of an entire absence of hair over greater or less extensive surfaces usually covered by it, or it may appear as a general scantiness of these appendages. In certain rare cases there is an entire absence of hair, and microscopic examination has demonstrated the absence of hair bulbs from the skin. The condition is to be regarded as an arrest of development, and is sometimes associated with deficient formation of other structures, as the teeth. Hereditary predisposition is marked, and the deficient development of the hair often runs in families.

2. *Alopecia acquisita* naturally includes all forms of simple alopecia, beginning in extrauterine life. We divide them again into *a. senilis* and a. *prematura*, according as they manifest themselves in old age or during early adult life.

Alopecia senilis.—Senile calvities, the baldness of old age, is but one of the many evidences of diminished nutrition, and atrophy of the tissues which accompany advancing years. When the subcutaneous tissues begin to atrophy, the glandular structures, including the hair bulbs, share in the process. Usually, the hairs first turn gray, then become dry and thin, and when they fall, are not replaced by a new growth. The process usually begins upon the forehead, and extends backward until the whole vertex is bare; but the hair almost always persists over the occipital and temporal regions. The affected skin shows other signs of retrogressive change; it is smooth, shining, lightly stretched and adherent to the subjacent tissues. A few soft, woolly hairs may still be present, but in advanced cases the orifices of the glandular structures are hardly visible. Microscopically, the sebaceous glands of the affected skin are found deformed, the hair follicles are

atrophied, the papillæ absent in many cases, and some, perhaps, contain a stunted and minute hair. The fat cells of the subcutaneous tissue are shrunken in size and diminished in number; the corium is thinned, and its connective tissue bundles have undergone a fatty, colloid, or pigmentary degeneration.

Senile alopecia is generally, but by no means invariably, preceded by grayness of the hair. It is curious that, though the atrophic processes are quite general throughout the body, the hair of the beard and other parts is but rarely affected. It is also to be remarked that women seldom suffer from this variety of baldness.

Under *alopecia prematura*, we class the various forms of simple idiopathic or symptomatic baldness occurring during early life.

Of these, *alopecia prematura idiopathica* is one of the commonest. The disease commonly manifests itself during the third decennium of life, and begins with an increase above the normal in the number of hairs cast off daily. At first, these hairs are replaced by others, thinner and shorter; but at last they cease to be reproduced, and a gradual diffuse thinning of the hair results. Withal the scalp continues apparently perfectly healthy; there is no seborrhœa and no atrophy. The process may be rapid; but it usually takes years to run its course, and results in permanent baldness. Its location is the same as that of the senile alopecia; and like the latter affection, it is much more frequently found in men than in women. Microscopically, an increase in the connective-tissue elements of the skin, with consequent contraction, compression of the vessels, and interference with the blood supply, has been observed.

A. prematura symptomatica includes the remaining forms of simple alopecia. Falling of the hair, and more or less extensive baldness is apt to occur during convalescence from certain acute diseases, especially the fevers, and has also been noticed as a consequence of severe nervous shock, or long-continued mental strain. In these cases the alopecia is usually only temporary. Under this head is also to be mentioned the

alopecia resulting from affections of the skin involving the hair follicles. Thus in variola, acne, lupus, ulcerative syphilitic affections, etc., the hair is destroyed over more or less extensive areas. In certain affections the hair papillæ are compromised by the small-celled infiltration which occurs; as is the case in lichen ruber, lupus erythematosus, and in the small papular syphilide. In sycosis non-parasitica or perifolliculitis barbæ, the hair papillæ are destroyed by the periglandular inflammation. In favus and trichophytosis, the parasite invades the hair follicles, causes the hair to loosen and fall out, and eventually causes destruction of the papillæ. Acute eczematous processes, erysipelas of the head, etc., also cause loosening and falling of the hair. In all these cases the alopecia is symptomatic and merely deserves mention here; under the heading of each disease the subject will be more fully discussed.

It remains for us to notice briefly the alopecia of syphilis. Falling of the hair occurs in syphilis, during the early stages, as one of the secondary symptoms. Later on it may occur in consequence of the general cachexia, or over localized patches, from specific ulceration and destruction of the skin. The early syphilitic alopecia is one of the most constant manifestations of the disease. It generally occurs during the first six months; the hairs become dry and brittle, and fall out in varying quantity. Usually only part of the hairy covering is lost, but in some cases complete baldness results, even the hair of the eyebrows and lashes, of the pubis and general surface, falling off. However extensive the alopecia from this cause may be, it is not permanent; in a few months or a year or two, the hair is reproduced, especially if the patient be under appropriate treatment. The alopecia resulting from the later ulcerative lesions is of course permanent.

Etiology.—Lately the contagious character of alopecia prematura has been proclaimed. Positive proof thereof is not as yet before us, but a series of experiments undertaken in 1882 by Lasser and Bishop, render it probable that the affection is sometimes communicable from one individual

to another. These observers succeeded in causing baldness in various animals by inunctions of ointments, which contained the fallen hair and epidermis scales obtained from the brushes of a marked case of alopecia prematura. Under a vigorous plan of treatment the patient recovered, and it was found that baldness could no longer be produced by the application to the skin of animals of the detritus from his brushes. The whole subject is as yet an obscure one; but in view of extensive use of common brushes in the barber-shops to-day, it is one of special interest to many persons.

The etiology of the other forms of alopecia, in so far as we know anything about them, may be gathered from the descriptions of the individual varieties.

Diagnosis. — The determination of the kind of baldness present is usually easy when the extent and location of the process, together with the age of the patient and the presence or absence of other affections causing baldness, is taken into account.

Prognosis.—Senile alopecia, being one of the inevitable retrogressive changes of advanced life, cannot be remedied. Congenital alcpecia is usually partial and does not need treatment. Syphilitic alopecia tends to recovery of itself. Simple premature alopecia usually admits of good prognosis; whilst that of the symptomatic forms naturally depends upon the disease that causes them.

Treatment.—In a general way, the treatment of alopecia is the same as that prescribed at length for alopecia areata. Attention to the general health, together with the prolonged use of the various stimulating and irritating lotions, keeping the scalp permanently red and increasing the vascular and nutrient supply of the hair-follicles, are the main points. For the details of treatment the reader is referred to a. areata.

Congenital alopecia is usually slight—and does not require treatment. In the senile forms it is useless to attempt it. But in the premature baldness much good may be done by appropriate measures.

In symptomatic baldness the treatment is necessarily that of

the primary disease—eczema, psoriasis, favus, ringworm, syphilis, seborrhœa, etc. In conjunction therewith the various local measures detailed under the head of the treatment of alopecia areata may be employed.

ALOPECIA AREATA.

Syn.—Area Celsi, alopecia circumscripta, porrigo decalvans, tinea decalvans.

Definition.—Alopecia areata is an atrophic affection of the hairy system characterized by the more or less sudden appearance of one or more circumscribed, whitish, bald patches, varying in size or shape.

Symptoms.—Alopecia areata affects most often the scalp, but is also met with occasionally upon other hairy portions of the body; no subjective symptoms of any kind mark its onset. The patient may wake up in the morning to find a quantity of loose hair upon his pillow and a bald spot upon his head. Or he may simply notice for several days or weeks that his hair is falling out, until at length the spot has attained such a size that it is discovered by himself or his friends. These bald patches are circular or oval in out-line; at first quite small, they may gradually increase until they cover surfaces as large as the palm of the hand. One patch only, or several may be present; their commonest seat is over the parietal regions. The skin of the affected area does not look natural, it is smooth, shiny, chalky white; but there is no desquamation, or the slightest sign of inflammation. (See fig. 55). At the periphery of the patch the hairs are thin, short, and quite loose; a very moderate amount of traction is sufficient to pull them out. By the falling of these peripheral hairs the disease gradually extends. The patches become larger, and adjacent ones coalesce, until, perhaps, eventually only a thin fringe of hair remains extending from each ear to the nape of the neck, or the whole surface may even become as smooth as a billiard ball. Often the disease is unilateral.

In these extensive cases the skin becomes dry and thin; the

orifices of the follicles become inappreciable ; and the shining surface looks like the scalp of alopecia senilis. Usually thin lines of lanugo hair remain to mark the divisions of the original areas.

After persisting for a variable time, usually for months, the

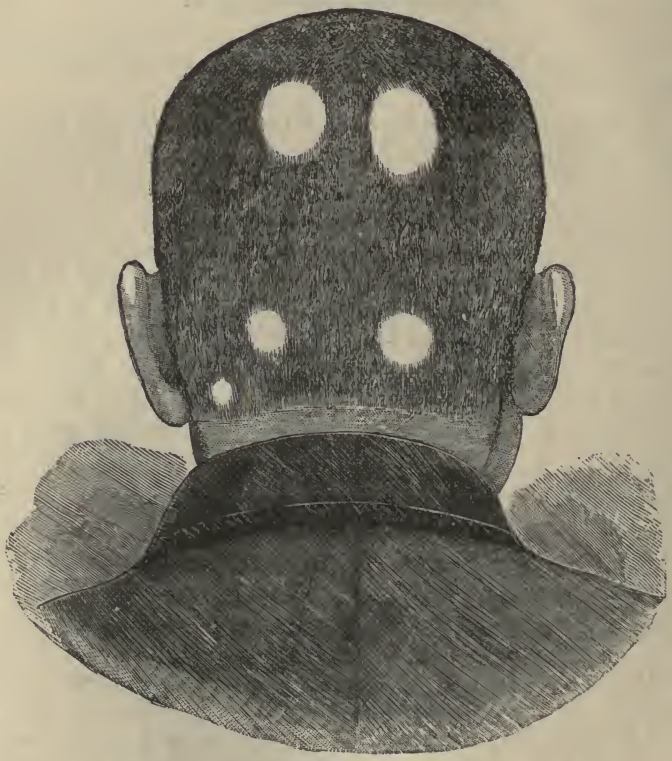


Fig. 55.—Case of alopecia areata.

process comes to a standstill. Then after a short time, a thin growth of lanugo hair begins to appear upon the previously hairless areas. These short and woolly hairs may gradually become stronger ; but in most cases they also fall out, perhaps more than once, before the real growth begins. In the most

promising cases it takes six months before a growth of vigorous hair is re-established, and it is often several years before the normal amount returns. In some cases nothing stronger than lanugo hairs ever grows from the affected follicles.

In a considerable number of cases the hair of other portions of the body is involved at the same time. Everywhere the process begins at the characteristic circular bald spots. Beard, eyebrows, axillary and pubic hair may all fall, and in certain cases the entire skin becomes as smooth as that of an eel.

As before stated, subjective symptoms are almost always absent. Burning and itching, etc., have been observed in some cases.

Anatomy.—Nothing very positive has been found in the microscopic examinations which have been made. There is more or less atrophy of the hair shafts and bulbs, sometimes bulging or breaking of the hair. The hairs, in fact, are in the condition of hairs that have reached the end of their life-history. Most competent observers have failed to find any constant alteration either in the glandular structures, or in the constituents of the skin itself. The question as to whether the affection is parasitic in origin or not is still undecided. There are many points in its clinical history that favor the parasitic theory, but the failure of so many competent observers to find a fungus and the absence of any apparent contagiousness leaves the matter in doubt. I have examined many hundred sections and hope soon to arrive at some definite conclusion in the matter.

The appearances of extracted hairs are shown in figs. 56, 57, 58 and 59.

Diagnosis.—Ringworm of the head is the disease most liable to be confounded with alopecia areata. In tinea tonsurans the baldness is incomplete, the patch is reddened, thickened, and slightly scaly; in fact the symptoms of the accompanying eczema are almost always to be found. The short, rubbed-off and split hairs also are characteristic of the parasitic disease; and there is almost always to be obtained the history of

contagion. Finally, in doubtful cases, the microscope will always settle the difficulty. In alopecia areata there is atrophy of the hair and bulb: in tinea tonsurans the trichophyton will

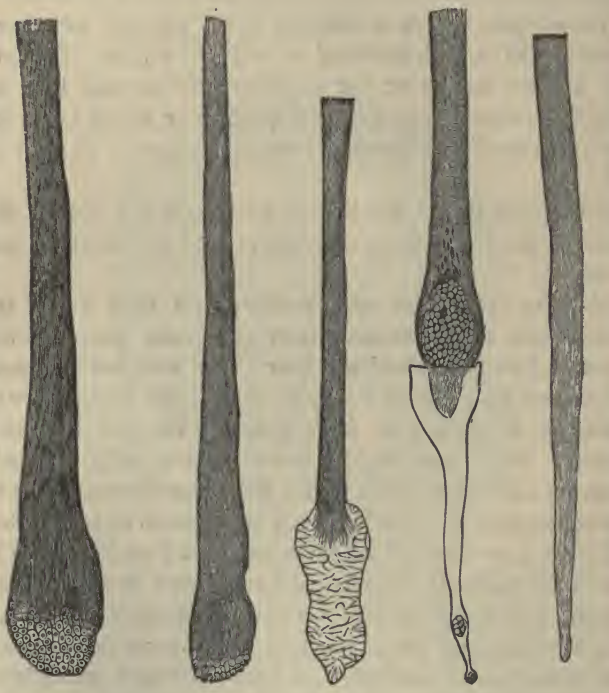


FIG. 56. FIG. 57. FIG. 58. FIG. 59.

always be found in the follicle, and is often seen invading the hair-bulb and shaft itself.

Favus can hardly be mistaken for alopecia areata, distinguished as the former disease is by the characteristic yellowish crusts and the cicatrices.

Etiology.—The etiology of alopecia areata is as yet one of the disputed points in dermatology. The disease occurs most commonly in children; the majority of these patients are from six to twelve years of age. It almost invariably begins before

puberty. A single congenital case is reported by Michelson. It is commoner in the male than in the female sex.

It has been claimed that the disease is invariably seen in patients suffering from defective nutrition of some kind. This is certainly not the case; children of the sturdiest growth seem to be just as liable to it as those affected by rachitis, scrofula, etc. It is surely not contagious, though a certain number of cases are on record in which two or more members of the same family have suffered from it.

Various observers have claimed for alopecia areata a parasitic origin. Gruby, in 1843, described a parasite which he called the microsporon Audouini, and more recently Melassez and Eichorst and Thin have made observations which support his claims. Nevertheless, in the vast majority of cases, and by the greater number of competent observers, no parasite has been found; and its evidently non-contagious character militates against the view.

We are forced, then, to refer alopecia areata to nervous influence, and at the present day most dermatologists look upon the affection as a trophoneurosis. Its occurrence together with neuralgias, morphœa, and other distinctly neurotic affections, as well as its appearance after nervous shocks, frights, etc., points in that direction. In fact, the falling of the hair is to be looked upon simply as one of the effects of the impaired nutrition of the skin. Perhaps the disease has been entirely too sharply distinguished from the other varieties of baldness. Bohn regards it as a special kind of alopecia prematura, differing from the ordinary varieties in its frequently sudden onset, its peculiar localization, and its better prognosis.

Prognosis.—In young individuals the ultimate prognosis is almost always good, though it may be months or years before recovery takes place. In older cases recovery does not so often occur; but even in the worst instances the patient suffers from nothing more than the deformity which the malady occasions.

Treatment.—A variety of local and general measures are employed in the treatment of alopecia areata; but it does not seem that by their use we can with certainty cut short the

natural cause of the disease or prevent new centres of baldness appearing. This is not surprising if we consider that, to the best of our present knowledge, alopecia areata is a trophoneurosis, regarding the real cause of which we are entirely ignorant. Nevertheless, a vigorous internal and external treatment does perhaps stimulate the growth of strong hair on the affected spots, and is certainly of benefit in sustaining the morale of the patient during the tedious course of the malady.

The general treatment is of the most moment. It should consist in the use of tonics—iron, quinine, cod-liver oil, the mineral acids, etc., continued for long periods of time. Arsenic seems to be of especial importance, and it should always be used in conjunction with other measures. Any concomitant disease or diathesis should also be appropriately treated.

A wide field is open to us in our choice of local remedies to apply to the affected skin ; but they all consist of applications that stimulate the vascular supply of the diseased tissues and thus better the nutrition of the papillæ and hairs. Alcoholic and etherial fluids form the basis of most of the recommended lotions, and with them may be combined various rubefacients and irritants—cantharides, mercurials, capsicum, etc. Perhaps as good a one as any is a one to three-grain solution of the corrosive chloride of mercury to the ounce of alcohol or cologne water. An ounce each of the tincture of capsicum, of the tincture of cantharides, and of alcohol, together with a drachm of castor oil is also beneficial. The oleate of mercury, 2% to 10% solution, does very well in many cases. Hebra and Kaposi recommend the etherial oils in alcoholic solution—thus ℞. Ol. macis, ʒ ii. ; spts. vini rect., spts. lavand, āā ℥ ii. Tar or carbolic acid, ʒ i. to ℥ vi. of alcohol, with ℥ i. of glycerine, may also be employed. Tincture of aconite, and tincture of veratrum viride, combined with some of the above solutions, are useful. Aq. ammonia forms one of the commonest of the applications used in the disease. The tincture of green-soap may also be used.

Various ointments may be employed. Chrysarobin, in 5-15% ointment, each application being preceded by vigorous friction

of the scalp with soap and water and a rough towel, is very good.

Blistering the affected areas has been successfully used in many cases. Oil of turpentine, oil of almonds, etc., may be rubbed into the scalp with a hard brush twice daily. In very obstinate cases the scalp may be kept reddened by the use of croton oil, one part to two or four of olive oil.

Finally, in the most obstinate cases, electricity may be employed, and quite recently the subcutaneous injection of muriate of pilocarpin has been recommended.

As a rule, all these cases can bear strong applications; whichever one we employ we must use it strong enough and often enough to keep the skin of the affected areas permanently reddened.

ATROPHIA PILORUM PROPRIA.

Atrophy of the hair occurs under a variety of conditions, most of which, however, are symptomatic. To this class belong those instances of impaired nutrition of the hair which we remark in syphilis, and during the course of the various fevers; as also that occurring in the parasitic diseases, tinea tonsurans, favus, and also that seen in seborrhœa of the scalp. In fevers the hair becomes dry and lustreless, exactly as the analogous structure, the epidermis, becomes harsh and devoid of moisture. The hairs are very hygroscopic and usually absorb a large part of both the insensible and the sensible perspiration from the scalp. During the febrile process the amount of moisture excited by the perspiratory glands is much lessened, and the hairs suffer. In tinea and favus the parasite invades the hair shaft, the cortical substance is split by the proliferating mass, the hair breaks off, leaving the proximal end projecting like a minute brush above the surface of the skin. These varieties of atrophy of the hair are, however, more properly considered elsewhere. Here we have to describe two forms of idiopathic atrophy of the hair, namely, fragilitas crinium, and trichorexis nodosa.

Fragilitas crinium.—A tendency of the hair to break after it has attained a certain length is not uncommon. In its simple form it occurs both on the head and the beard, but is most often seen in women. Sometimes some or all of the hairs tend, after they have attained a certain length, to split into filaments. Both forms may be easily explained by the supposition that when the oldest portion of the hair gets to be so far off from the root that moisture is no longer transmitted through the medulla, it becomes dry, and either breaks off or splits up into filaments. In some of these cases, however, the hair shows an abnormality of nutrition from the beginning, it being irregular of formation, or thicker at some points than at others.

Duhring has described another form of defective nutrition of the beard characterized by marked atrophy of the bulb and splitting of the hair shaft, while still within the substance of the skin. The filaments grow separately, and cause considerable irritation of the tissues. The disease is not parasitic.

Trichorexis Nodosa.—Beigel and Kaposi have described another peculiar affection of the hairs, which the latter has designated trichorexis nodosa. It consists in the formation upon the hair of one or several shining, semi-transparent rounded swellings. As many as half a dozen may be present at different places upon a single hair. At first sight they look like the "nits" of pediculi, but closer inspection shows them not to be foreign bodies glued to the hair, but swellings of the hair-structure itself. At the points where these swellings occur the hair is very liable to break, and hence in bad cases a large proportion of the hair ends at the centre of one of these swellings, and it looks as if the hair or beard had been "singed." Almost always the beard, mustache, or eyebrows, are the parts affected; rarely does the affection attack the hair of the head. Microscopic examination of these hairs has revealed the fact that the medullary as well as the cortical substance is swollen; that as the marrow becomes larger the cortex splits and the continuity of the hair is only maintained by the interlacing of the cortical filaments, giving a rhomboid form to the mass; and that there is no trace of any parasite. Nothing is known as to the cause of

this peculiar affection. Beigel supposes that gas is developed in the medulla, and that this swells it out and splits the cortex. The only means of treating the affection is by shaving. In a certain number of cases the new growth of hair has been normal; but Kaposi tells us that three colleagues of his who are affected with the disease have, in the course of years, sacrificed their beards a number of times, only to find the new hair present the same abnormality as the old. In bad cases the affection is quite disfiguring.

Treatment.—Beyond shaving, we cannot accomplish anything by treatment.

ONYCHATROPHIA.

Atrophy of the nails may be congenital or acquired. In congenital there is either absence of the nail, or defective development on ill-developed fingers or toes; if all are defective, then it is associated with absence of hair.

Acquired atrophy of the nails may be either idiopathic or consecutive. It occurs as a consequence of injury or disease of the nerves of the part, or in consequence of some general disease, as syphilis, or in association with a weak, debilitated state of the system. All of the conditions mentioned as causing hypertrophy, as eczema, psoriasis, etc., may produce atrophy or degeneration of the nail. Atrophied nails are smaller and thinner, or brittle and split, or soft and degenerated; their color varies in different cases. They may be pale, or opaque, or dark in color. The treatment depends upon the cause.

CLASS VII.

NEOPLASMATA—TUMORS.

RHINOSCLEROMA.

Definition.—Rhinoscleroma consists of a circumscribed, flattened, irregularly-shaped, very hard, dense, inflammatory, new growth seated in the nasal region.

Symptoms.—This disease is confined to the nose and immediately surrounding cutaneous tissue and neighboring mucous membrane. The alæ nasi, and apex of nose are hard, dense, and without much increase of volume in the beginning of the disease. It appears in the form of brownish-red, somewhat elevated, sharply limited, isolated or confluent, hard, flat tubercles, painful upon pressure and which afterward increase in size. They appear especially upon the cutaneous surface and afterward upon the nasal mucous membrane, at the inner angle of the eye, and on the upper lip next the nose. It is in firm connection with the skin, and is only movable in connection with the latter. The apex of the nose and the alæ, become of ivory-like hardness, immovable ; the surface either smooth or uneven, and of normal color, or a dark brown-red, crossed by some vessels, shining, and devoid of glands and follicles ; like a keloid or hypertrophic scar. The nose becomes broader, sometimes deformed from thickening of the alæ ; the nasal orifices are at first narrowed, afterward closed by the new growth ; the surrounding skin is normal in character.

The disease begins either on an ala or on the septum, as a thickening and hardening, without any accompanying inflammatory symptoms, and gradually assumes the characters already described. The sense of smell is but little altered, the mucous membrane of the pharynx, the uvula, tonsils, soft palate, the

posterior pharyngeal wall, show granulations and ulcers, which are characterized by their hardness. The gums appear unevenly swollen, the teeth become loose and fall out ; this condition generally occurs late in the disease. The affection is always chronic, though the rapidity of its course is according to the situation ; in the soft palate the tissues soon break down ; in the nose, ulceration or any retrograde metamorphosis peculiar to new growths never occurs. Occasionally there may be flat excoriations, or the new tissue become softer in consistence. If a portion is removed the remaining part does not suppurate or break down, but the raw surface is soon covered with a thin crust, and heals in a short time. The growth reproduces itself very rapidly, even if the whole tumor has been removed. As subjective symptoms, nothing is to be observed except slight pain upon pressure, and the interference with respiration from the narrowing of the nasal orifices, or of the pharynx or larynx. The disease has no influence upon the general system. It appears generally between the fifteenth and fortieth year of life.

Anatomy.—Kaposi classes it as a small-celled sarcoma. He found the epidermis and rete normal, and in the papillæ and corium a dense infiltration of small cells. Also in the mucous and sub-mucous tissue a dense infiltration and connective tissue new growth is to be observed. There was also a cell infiltration even in the cartilage. The cells are smaller than the so-called granulation cells met with in acute and chronic inflammations of the skin, they are finely granular, refract light feebly, are well preserved, have a sharp outline and distinct small nuclei. The deeper layers of the corium show a dense connective tissue felt-work. According to Mikulicz, rhinoscleroma is a chronic inflammatory process with small cell infiltration by which the normal tissues are displaced. The infiltrated round cells change into spindle cells, and later into a connective tissue network. In the alveoli of this network lie round cells ; these also afterward disappear and a firm connective tissue remains. The principal part of the growth shows a homogeneous, bacon-like appearance, feels hard, but is easily cut with a knife. The infiltration process passes from the

depth toward the surface. The sebaceous and sweat glands are destroyed ; the nerves are unchanged. In the later forms the adventitia of the blood and lymph vessels and their neighborhood is infiltrated with cells. They are large, branched, swell up and are fatty degenerated ; later the epithelium breaks down and forms prolongations ; the smooth muscles are waxy degenerated, or form connective tissue. The cartilage is unchanged or thinner. The bones are unaffected.

Prognosis.—The prognosis is unfavorable, as the disease always continues to spread, even if repeatedly extirpated. The

FIG. 60.—Case of rhinoscleroma—Hebra.

interference with respiration from closure of the respiratory orifices can also be serious.

Etiology.—The cause is not known. Some regard it as a result of hereditary syphilis. Against this view is the complete resistance it offers to anti-syphilitic treatment, and the persistence of the infiltration.

Diagnosis.—The location and the symptoms above described suffice for the diagnosis of rhinoscleroma from lupus, syphilis, keloid and epithelioma.

Treatment.—Treatment is necessary to prevent interference with the respiration and death from suffocation. Destruction

with caustics, dilatation of the nasal passage with sponge tents, or extirpation with the knife, of a part or whole of the mass may be resorted to, but the disease returns after a time. Fortunately it is a very rare disease, especially in this country. The only case I have seen was in Vienna, and the above description is compiled from the writings of Hebra and Kaposi.

LUPUS ERYTHEMATOSUS.

Syn.—Lupus erythematodes ; seborrhœa congestiva ; lupus sebaceus ; lupus superficialis.

Definition.—Lupus erythematosus is a small-celled new growth of the skin, and appears as one or more circumscribed, variously-sized, round or irregular reddish patches, covered with grayish-yellow, adherent scales.

Symptoms.—Lupus erythematosus was described by Hebra in 1845, under the title of seborrhœa congestiva, and was given its present name by Cazenave in 1851.

The malady commences as one or more red, pin-head to pea-sized, very slightly elevated patches, shining, and somewhat depressed in the centre, or covered with a thin, firmly adherent scale. Most often we see a small, yellowish, soft, sebaceous looking scale, surrounded by a pinkish raised border. This forms what is called the *primary efflorescence* ; all the lesions begin in this way, but their further course of development may be in either one of two distinct lines of growths, giving the two forms of the matured disease. In the first form, called *lupus erythematosus discoides*, the one or more spots that form the primary efflorescence increase very slowly by peripheral growth, and take months or years to attain their complete development. If there be more than one spot they eventually coalesce and form more or less irregular marginate patches. At length we have a pinkish-red discoid surface, of any size, from a pea to that of the palm of the hand. The centre of the patch is depressed, shining, and somewhat cicatricial in appearance, or it may be covered with fine, yellowish-gray, firmly adherent scales. The margins of the patch are red or violaceous, ele-

vated, and very distinct; it is often surrounded with comedones and the opening of the dilated gland ducts. The amount of scaling varies much in different cases; often it is very marked, and Hebra therefore called the disease a congestive seborrhœa. When the scales are removed, the small projecting processes which dipped down from their under surface into the mouths of the patulous ducts of the sebaceous glands are plainly visible.

The patch once formed, slowly increases, and eventually reaches a stationary period, in which it may remain for months or years. The peripheral cell-growth may then cease, and the process stop; the margin disappears, the color fades, and at last only the thin, shining and very superficial scar is left. Individual patches may last many years, and very often a succession of them may prolong the disease.

Lupus erythematosus discoides is usually found upon the cheeks and the nose. Upon the latter situation it is very apt to commence upon the bridge, and extend downward on either side, forming the well-known appearance called the "butterfly lupus." Other parts of the nose, as the tip and alæ, the eyelids, the ears, the lips, etc., may be affected; as may also in rare cases the fingers and toes. When it occurs upon the hairy parts, as the scalp, it causes destruction of the hair follicles and permanent baldness over the affected area.

The general health of these patients is almost invariably good; there are no subjective sensations; the patch is more annoying as a deformity than troublesome as a disease.

The second variety, or *lupus erythematosus disseminatus* is a more general and more serious affection. It begins as the primary efflorescence, as above described, but instead of one or two, a number of patches are present from the beginning. They exhibit no tendency to peripheral growth, but the disease increases by the continuous appearance of new patches among the old ones. In this way extensive surfaces upon the face and other portions of the body become the seat of the disease. Not only may the ckeeks, lips, ears, scalp, etc., be affected, but the hands and feet, the arms and legs, and the trunk itself, may be involved. Large portions of the body may be thickly sown,

as it were, with these lupus nodules, and in rare cases the disease may be nearly universal. In these latter instances the affection sometimes has an acute febrile invasion ; obstinate erysipeloid inflammation of the face occurs during its course, with high temperature and sometimes the typhoid state ; it terminates in death in at least half the instances.

In these extensive cases each single patch goes through exactly the same course as was described in the discoid form, save that they do not tend to extend peripherally.

Lupus erythematosus has been seen upon the mucous membranes of the gums and upon the inner surface of the cheeks. In either the single or the disseminate form, the disease persists for many years. Whenever it disappears it leaves characteristic, very superficial, shining scars behind. It is said in some cases not to cause a loss of tissue and a connective-tissue new growth. The hair is always permanently removed.

Anatomy.—No specially characteristic morbid appearances are to be found in the portions of integument which are

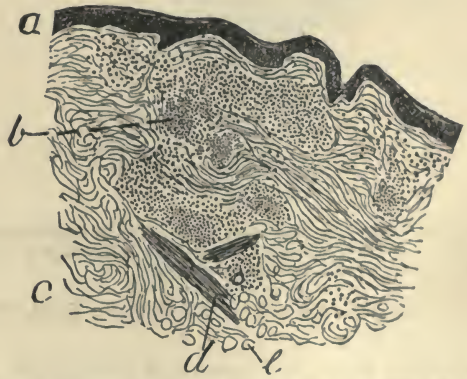


FIG. 61.—Lupus erythematosus papule under a low power. *a*, epidermis ; *b*, embryonic cell collection ; *d*, muscle ; *c*, subcutaneous tissue ; *e*, fat cells.

the seat of lupus erythematosus. In its essence the process consists of a chronic inflammation of the cutis, leading to degeneration and eventually to atrophy. By the older investigators the sebaceous glands were considered to be the

parts in which the disease originated, and indeed Hebra at first designated the affection as seborrhœa congestiva. In a certain proportion of cases this is undoubtedly the fact; but in the large majority of instances the disease affects all the constituents of the skin, and may originate in any one of them, even in the subcutaneous connective tissue.

In accordance with the superficial or deep origin of the individual foci, will the spots of lupus be superficial, ele-

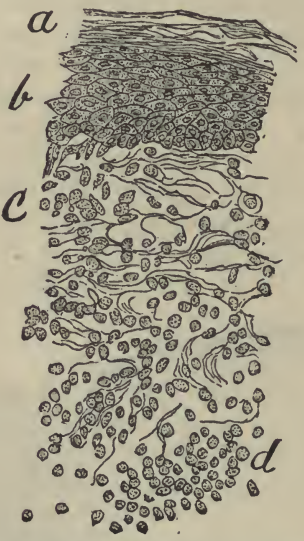


FIG. 62.—Section from peripheral part of a patch of lupus disseminatus. *a*, corneous layer; *b*, rete mucosum; *c*, upper part of corium; *d*, completely changed tissue, only embryonic cells being present.

vated, and bright-red, or appear as deeper, hard, œdematous papules and tubercles.

In its essence, lupus erythematosus consists of a chronic inflammatory process, appearing at separate foci, commencing most often in the glandular structures of the skin, but very frequently finding its origin and chief seat in the other dermal structures, and even in the underlying connective tissue; never ending in the formation of pus, but going on to absorption of the existing, and to production of new connective tissue.

Microscopic examination of patches shows the ordinary appearances of inflammation, affecting chiefly now one, now the other, layer or structure of the skin. The sebaceous glands are enlarged, and their walls are filled with small-celled infiltration. The bloodvessels are dilated, the surrounding connective tissue is infiltrated with embryonic corpuscles. In fact, the whole affected part is filled with a small-celled inflammatory new growth, derived partly from the vessels and partly from the connective-tissue cells of the part.

If the infiltrate is situated in the lower part of the corium we get the deep-seated papules and tubercles ; if in the upper layers we get the red spots of the more superficial forms. The increased proliferation of the cells of the sebaceous glands, causing seborrhœa, the swelling of the skin and scaling of the epidermis are all effects of the localized inflammation. In some cases the process is more acute. Serum, which may even be bloody, exudes between the layers of the epidermis ; blebs are formed, and small hæmorrhages into the corium occur. In no case, however, is the infiltrate abundant enough to compromise the circulation and form pus.

The further course of the process varies in different cases. The inflammation may cease, absorption may occur, the new cells disappear, and the parts return to their normal state. But more usually, degenerative changes with subsequent new tissue formations take place. The small-celled infiltrate undergoes a partial fatty degeneration ; the vessels are diminished, the fat of the panniculus adiposus disappears wholly or in part ; the glandular structures are atrophied and deformed ; the hairs lose their pigment, or fall out ; the connective-tissue elements themselves undergo a sort of hyaline degeneration. Finally, as the usual result of the process, new connective tissue is formed ; cicatricial tissue replaces to greater or less extent the normal elements of the skin, and scars of varying extent mark the spot that has been affected by lupus erythematosus.

Etiology.—There is but little to be said under this head. When commencing around the sebaceous glands congestion is undoubtedly often the first stage of the malady, but it may

occur on parts where there are no sebaceous glands, as the palms of the hands. The affection is seen most often during early adult and middle life, rarely occurring before puberty. Both forms are more frequent among women than among men in the proportion of two to one.

A variety of affections of the internal organs have been noted among the women affected with lupus erythematosus, especially of the disseminated and febrile form, such as anæmia, chlorosis, uterine diseases, etc., but we cannot regard them as anything save accidental complications, and men subject to the disease may enjoy excellent health. Some of the cases I have seen have subsequently died of tuberculosis.

Diagnosis.—The more limited, discoid forms of the disease will rarely give rise to any errors in diagnosis. The peculiar shape and location of the disease ; the central and superficial scar ; and the extreme chronicity of its course are all distinctive. The disseminated form is more liable to be mistaken for other affections.

The other maladies with which lupus erythematosus of either form is liable to be confounded, are ringworm, psoriasis, eczema, syphilis, and lupus vulgaris. Tinea tonsurans is characterized by a non-infiltrated margin, outside of which we will almost invariably find some scattered vesicles and papules ; by a centre either slightly reddened and eczematous, consisting of normal integument ; by its rapid course ; and finally, by the nibbled-off hairs and the presence of the peculiar parasite as seen under the microscope. In erythematous lupus the margin is hard and infiltrated, the central portion, over which the disease has passed, is covered by a superficial scar ; nibbled-off hairs, and fungi are never present ; and the affection lasts far longer, as it spreads very slowly, requiring years to extend as far as ringworm does in a few days. An impetiginous or squamous eczema may at times look very like the disease under consideration ; but its course, the presence of itching and of exudation, and the absence of scarring, and of the firmly adherent scales with their sebaceous plugs should prevent all error.

Syphilis is characterized by ulceration and by the peculiar infiltrated margin, by the rapidity of extension, the absence of sebaceous plugs and the presence of the disease on other parts of the body. From lupus vulgaris the disease may be distinguished by the evident involvement of the sebaceous glands, as shown by the oily scaling, the enlarged gland mouths and the comedones; by the absence of ulceration; by the greater superficiality of the scar, which does not, as does very commonly lupus vulgaris, involve the cartilaginous structures; by its usual non-appearance until the age of puberty; and, finally, by the absence of the brownish-red soft papules which characterize the latter disease.

Psoriasis should never be confounded with lupus erythematosus; the whole history, course, and general appearance of the two diseases are so different.

Prognosis.—The prognosis of lupus erythematosus in the limited disc-like form, which is the one we most commonly see, is good. Some atrophy, loss of hair, and scarring occurs; but the general health is in no way interfered with, and the disease tends ultimately to recovery, even if left alone. In the more general, disseminated cases of the disease, it is otherwise. Acute exacerbations are liable to occur, brain symptoms are not uncommon, and a certain number of cases end fatally. Chest complications, phthisis and pneumonia, are also observed. Finally, the wide extent of the disease in these cases renders local treatment both difficult and unsatisfactory.

Treatment.—Although the disease is to be mainly managed by local applications, general treatment must not be neglected. Iodized starch has been recommended by McCall Anderson, in doses of a teaspoonful taken in milk; and iodoform by Besnier. A general tonic treatment—iron, cod-liver oil, cold baths, change of climate, is of benefit, as a considerable proportion of patients suffering from lupus erythematosus show an impaired nutrition, anæmia, or chlorosis. Arsenic also seems in some cases to exert a beneficial effect.

It is the local treatment of the disease, however, to which we must particularly direct our attention. A number of remedies

have been successfully employed, but it is not possible, in the present state of our knowledge of the subject, to give the exact indications for the use of any of them. In every case it is necessary to proceed tentatively; to try first one and then another; and in not a few cases we will run through a long list before we find anything that will effect a cure. We must never lose sight of the fact, however, that the course of the disease is an exceedingly variable one. Patches of lupus erythematosus may recover spontaneously—or from the effects of treatment, within a comparatively short time ; they usually leave scars and local telangiectasis, but they may heal without leaving anything but the normal skin-structure behind ; they may be very amenable to the simplest procedures, but may also obstinately resist any but the most radical measures. We must remember that in the majority of cases a recovery would eventually be reached with but a very slight and superficial cicatrix ; and we must choose our therapeutic measures accordingly, commencing with the simplest remedies, and only using the severer means when the former have had a thorough trial so as not to produce unnecessary scarring. As the commonest seat of the disease is on the face, it is important to accomplish our end with the least possible amount of disfigurement. Even when we are compelled to use the stronger applications, it is proper, as soon as the margin of the patch begins to get pale and flatten out, to return to the milder measures before tried, and to continue the treatment by their means.

One of the best of the more superficial remedies, and the one with which in most cases, the treatment should commence, is green soap. This may be rubbed daily into the patch alone, or with water, or, better, with an equal part or half the quantity of alcohol as the tincture sapo viridis. Spread upon a cloth, and bound down to the part, it acts yet more vigorously. Any simple ointment may be used after the application. Very superficial cases may be cured by this means alone ; and in any case it is useful to remove the scales and prepare the patch for future treatment.

Mercurial preparations should probably stand next upon our

list. Kaposi claims to have obtained brilliant results both in the discoid and the disseminated form from the use of mercurial plaster, having by this means alone cured otherwise obstinate cases in a few days or weeks. The oleate of mercury, in ten per cent solution, may be daily brushed over the diseased spot instead of the plaster.

Should these means not suffice, the tincture of iodine may be used, either alone or with glycerine; or chrysophanic or pyrogallic acids, in ten per cent. ointment; or carbolic acid in the same form. Sulphur ointments and alcoholic sulphur lotions are highly spoken of by Duhring. Ung. naphthol, five per cent., may also be tried. Tar, oleum cadini, and oleum rusci are of service and may be used as ointments alone, or combined with sulphur and green soap. The officinal compound iodine ointment has done well in some cases, as has also brushing the patch daily with aqua ammonia, and acetic acid.

If it becomes necessary to have recourse to deeper-reaching measures, we may try a solution of caustic potash, 1 to 2 or 4 of water, applied every fifth day or so. The action of the caustic should be neutralized a few minutes after the application by the use of dilute acetic acid. Or we may try the mineral acids—nitric, sulphuric, chromic, etc., or the acid nitrate of mercury or chloride of zinc, or the nitrate of silver may be used. These severer measures must be cautiously employed, and a soothing ointment should follow their use. In a larger proportion of cases some of the milder measures detailed in the preceding paragraph will be found quite sufficient for the treatment of the malady.

The method described by Th. Veiel has proven quite successful in obstinate cases. The diseased patch is either scarified or blistered, and then cauterized with a mixture composed of equal parts of alcohol and chloride of zinc. In ten days the procedure must be repeated, and some half dozen scarifications and cauterizations are usually necessary. The patch should then be treated with mercurial plaster, and later by mildly stimulating lotions or ointments.

The dermal curette has been successfully employed in many

cases, and is especially recommended by Neumann and Auspitz. It is especially applicable for the more limited, but deep-seated varieties of lupus. The galvano-cautery has also been satisfactorily used.

In the more acute diffuse cases, when there is considerable inflammation and a good deal of pain present, it may be necessary to use cold applications, or lead lotions, etc. Kaposi claims to have seen spontaneous retrogression of many nodules under this treatment.

Whatever means we may employ for the treatment of lupus erythematosus, as soon as the infiltrated margins of the patch become pale and less prominent, the curative process has begun, and we should immediately revert to the green-soap lotions, or even to a simple ointment for its completion.

In extensive disease of the hairy scalp, caustics cannot be used. Here I prefer the use of the green soap and alcohol daily, followed after each rubbing by a solution of bicarbonate of soda or of subacetate of lead to limit the pain and burning.

LUPUS VULGARIS.

Syn.—Lupus exedens ; lupus vorax ; noli me tangere.

Fr. eq.—Scrofulide tuberculeuse.

Definition.—Lupus vulgaris is a chronic, non-contagious disease of the skin and adjoining mucous membranes, due to the presence in them of a cellular new growth, and characterized by variously sized, soft, reddish-brown, deep-seated papules, or larger infiltrations, and eventually terminating in ulceration and cicatrization.

Symptoms.—Lupus vulgaris occurs under a variety of external appearances, but, as in the case of lupus erythematosus, all forms of the disease begin in one and the same way. This first appearance we may appropriately call the primary efflorescence, and its characteristic features are visible to a greater or less extent in every variety of the affection.

The *primary efflorescence* with which common lupus begins consists in the appearance of small, deep-seated, pin-head to

small pea-sized, brownish-red or yellowish papules, situated deep down in the true skin. These papules are very soft, and are not perceptible to the touch, and in introducing the point of a pin into one of them, it is easy to demonstrate that their composition is much looser and softer than is that of the normal tissues. They increase very slowly in size, and in the course of months become elevated enough to be felt. All the varied forms into which the disease subsequently grows, are due to the development in different directions of these peculiar papules, and in every case they will be visible in some part of the diseased tissue. They even recur in the cicatricial tissue which forms where the malady has previously existed.

By the aggregation and merging together of a number of these papules larger masses are formed, and *lupus tuberculosis* results. This is the variety of the disease that most commonly comes under our notice. The papules are painless, brownish-red in color, of the size, perhaps, of a pea, and are usually grouped.

After remaining in this condition for a varying time, usually for many months, retrogressive changes set in. There may occur a simple, fatty degeneration of the cells composing the tubercles, ending in absorption of the new growth. The papule gradually disappears, leaving a more or less atrophied spot behind, covered with a shining and desquamating epidermis and then called *lupus exfoliativus*. Or, on the other hand, disintegration and ulceration of the infiltrated skin may occur, giving us the *lupus exulcerans* or *exedens*. This latter is perhaps the more common mode of termination. The lupus ulcerations appear as rounded, shallow excavations in the skin, bounded by reddish and soft borders. Their base is quite red, usually covered with granulations and bleeds easily. As a rule they are painless. Pus secretion and crusting are present to a moderate extent. Partly by ulceration, and partly by absorption, the lupoid tissue is gradually removed, and the sores heal eventually with the formation of soft, superficial scars. In many cases papillary outgrowths occur in the healing ulcers, and a more or less warty cicatricial tissue takes their place. In some

cases the warty excrescences may be very small, and they have been designated *lupus verrucosus*.

In every case of lupus vulgaris the cell accumulations go through this same course ; after persisting for a varying time they all end either in absorption and exfoliation, or in ulceration and cicatrization.

A number of other varieties of the disease may be mentioned, based upon differences of location and grouping. As long as the individual papules remain separate from one another, the affection is called *lupus discretus*. If the papules are comparatively few, and spread over a wide surface, it is called *lupus disseminatus*, etc.

Not only the skin, but the deeper parts, the subcutaneous connective-tissue and the cartilages, especially those of the nose and ears, may be involved. The mucous membranes, as well as the skin, may be the seat of the disease. Upon the mucous membranes of the gums, nose, velum, and even larynx, the lupus tubercles appear as soft, easily bleeding, brownish or red nodules, forming eventually larger patches and ulcerating surfaces, and terminating in cicatrization.

The most common seat of lupus is upon the nose. Here the disease may occasion great deformity, causing loss of the alæ, and of the cartilages, and sometimes complete occlusion of the nostrils. It often occurs on the mucous membranes, either primarily or by extension, and causes great destruction, ulceration, perforation and loss of the septum and other cartilages. The affection also occurs upon the cheeks, chin, and neck ; and may occasion great deformity by affecting the lips, eyelids, or ears. Lupus of the conjuctivæ and cornea is also to be noted ; it happens most often from extension from the eyelids. It appears very much like ordinary trachoma, and leads to pannus and considerable interference with vision. In the mouth, pharynx, and larynx lupus is sometimes seen ; causing in the former cases ulceration of the gums and tongue, falling out of the teeth, etc., and in the latter hoarseness, ulceration of the vocal cords, perichondritis and chondritis.

Upon the trunk lupus vulgaris may occur in any situation.

It is then usually diffuse or serpiginous in character, may affect large areas, and is very chronic. Upon the lower extremities it often leads to extensive warty outgrowths, with thickening of the skin and consolidation of all the tissues—*lupus hypertrophicus;* a condition very like that described as elephantiasis arabum.

Lupus vulgaris, as a rule, begins in childhood, about the fourth or fifth year. One single spot only may be affected, or it may cover very extensive surfaces. Favorable cases are circumscribed, last for a varying number of years, and disappear leaving cicatrices. In other cases the affection is widespread, and very obstinate; it may disappear, either spontaneously, or as the result of treatment, but it is liable to return upon the same or upon another portion of the body. It is common for it to last fifteen to twenty years.

Anatomy.—The pathology of lupus vulgaris has been the subject of much study by a multitude of observers, and its relations to tubercle and other chronic inflammatory processes is as yet by no means settled. The morbid process shows itself as a chronic inflammation, consisting essentially of a small-celled infiltration which primarily affects the deep corium, but which spreads in the later stages of the disease to all the tissues of the skin.

If we make a section of a portion of tissue containing one of the deeper and more recently formed characteristic soft papules, it is found to be composed of a delicate network of connective tissue, in the interstices of which are heaped a multitude of round cells with large and prominent nuclei. The entire nodule is surrounded by a dense layer of connective tissue, and is sharply limited from the normal corium in which it lies. Free nuclei are present in varying quantity, as are also the so-called giant cells. These latter consist of large, irregular homogeneous or finely granular masses of protoplasm, in which are from half a dozen to twenty shining oval nuclei. These are the cells which have been long known to occur in certain other morbid processes, notably in tubercle, and which were first described by Virchow and Billroth. Their occurrence

was supposed to be pathognomonic of the tubercular process, and upon this account Friedlaender claimed that lupus was essentially a tuberculosis of the skin. But though we do not know their mode of origin, it is a well-established fact that the giant cells are present in many various morbid processes, being found in gummata and even in ordinary granulation tissue. The greater part of the cellular constituents of a lupus nodule may be removed by shaking; the connective tissue network and the numerous bloodvessels being then left.

FIG. 63.—Section of a lupus nodule under a low power. *a*, epidermis; *b*, lupus nodule; *c*, hair follicle; *d*, upper part of corium; *e*, deep part of corium; *f*, muscle bundle.

In figure 63 the situation of the nodule beneath the papillary region, and its sharp limitation is well shown.

In its further development and in the retrogressive changes which sooner or later occur, the lupus process presents a very complicated morbid picture, involving, as it does eventually, all the elements of the cutis. As regards the nodule itself, after it has existed for a varying time, the retrogressive changes begin in its central portions. There the vascular supply is interfered with by the abundant small-celled new growth; the

cells become granular and fatty, and eventually break down. The greater part of the lupus nodule is incapable of organization, and is at last either absorbed, or, if situated superficially, cast off. But a portion of the tubercle becomes organized into connective tissue, which subsequently undergoes the usual contraction.

So much for the course of a single circumscribed lupus nodule. In very many of them, however, the process becomes much more widely spread. The small-celled infiltration spreads along the vessels of the corium and papillæ, both horizontally and into the deeper portions of the skin. At length the different inflammatory centres coalesce ; the entire intervening connective tissue becomes involved in the inflammation, and eventually we have an irregular diffuse cell infiltration of all portions of the affected skin. These larger infiltrated areas undergo the same changes as do the individual nodules. Fatty degeneration and absorption of the infiltrate, with cicatricial contraction of the skin and its glandular elements occurs, but in many cases chronic inflammatory changes take place in the affected connective tissue. Hypertrophic changes are seen, especially affecting the papillæ, and giving us then the form of the disease known as lupus verrucosus.

The epithelial structures are usually involved early in the disease. When the infiltration dips down and commences to affect the papillary layer, proliferation and fatty degeneration of the rete cells takes place ; when the rete is destroyed by suppuration the lupus nodules are exposed and ulceration occurs. Very early also hypertrophy and degeneration of the cells lining the hair follicles and the sweat and sebaceous glands occur. The hair papillæ atrophy, and the hairs fall out ; the ducts of many of the sebaceous glands are closed by the atrophic changes, and the dilated glands appear as milium-corpuscles in the affected tissue.

Kaposi figures one form of lupus vulgaris in which, besides the small-celled infiltration, the most prominent pathological appearance is the occurrence of simple or branched outgrowths of the epithelium, which dip down deeply into the corium ;

eventually forming, together with epithelial outgrowths from the cells of the sweat glands and hair-root sheaths, an epithelial network throughout the affected tissue. The appearance is of importance as forming the histological basis for the development of epithelioma, the combination of which with lupus, or its occurrence in tissues where the lupus process has run its course, has been noticed in a number of instances.

As regards the genesis of the lupus infiltrate, it must be regarded, in accordance with the latest researches of Lang, Stilling, Jarisch and others, as due chiefly to the proliferation of the cells of, and outgrowths from the protoplasmic walls and adventitia of the bloodvessels and lymphatic channels. These produce the network of fibrous tissue, the vessels and a portion of the cellular infiltration ; the remainder of the new growth owing its origin to the fixed and wandering connective-tissue cells of the inflamed stroma of the cutis.

Diagnosis.—Although lupus vulgaris usually presents a sufficiently characteristic appearance to remove all doubts as to the nature of the disease, yet in some cases its diagnosis presents considerable difficulties. It may be confounded with lupus erythematosus, epithelioma, eczema, psoriasis, acne rosacea, lepra, and finally, with syphilis.

There should rarely be any difficulty in differentiating it from lupus erythematosus. The entire absence of ulceration in the latter disease, not to speak of the absence of the small, soft, rose papules of lupus vulgaris, should suffice for the distinction. Besides this, erythematous lupus appears as superficial, reddish, circumscribed patches, covered with thin, adherent fatty scales ; the sebaceous system is markedly involved ; and the disease rarely begins until after puberty.

Epithelioma is peculiar in the amount of pain accompanying it, in the hard, everted waxy borders of the ulcer, with bloodvessels running to the very edge ; in the uneven, proliferating base; in the scanty, thin secretion ; in the location of the malady, and in the advanced age of the patient. Lupus ulcers are not so painful, have not the indurated edges, show no traces of an epithelial hyperplasia, have a reddish granu-

lating base and more abundant secretion, and usually begin in childhood. Epithelioma usually begins at one point—lupus at several ; nor does the latter occasion anything like the amount of tissue destruction which is caused by the former. The deep-seated, reddish-brown, soft papules observed in the cicatrix and outside the general patch are characteristic of lupus. Cases, though rare, have been described in which both diseases have been present in the same area.

Certain cases of localized papular eczema may, very rarely, cause difficulties in diagnosis. This occurs in some of the forms of eczema caused by the application of metallic substances in the form of ointments to the skin. But eczema runs a more rapid course than lupus ; the infiltration is never so deep-seated ; cicatrices are entirely absent ; and the specific, brownish-red papules, always to be found around the periphery of a lupus patch, are never present.

Psoriasis may be distinguished from the exfoliative form of lupus vulgaris by its favorite location upon the flexor surfaces, and by its appearance over large areas of the surface of the body. Lupus is usually quite localized, and appears most commonly upon the face. Besides this, if we remove the scales from the surface of a patch of lupus exfoliativus we get an infiltrated corium unmarked by bleeding points ; in psoriasis we get a normal, reddened, and easily bleeding surface.

Acne rosacea might possibly be confounded with a tubercular lupus. But rosacea always occurs in a certain location affecting the central zone of the forehead and face ; comedones, pustules, and dilated bloodvessels are present, and the disease most frequently comes on during or after middle life. Besides this, the papules of acne are larger, harder, and far more prominent than are those of lupus vulgaris.

Some forms of lepra tuberculosa may resemble a tubercular lupus very closely. The reader is referred to the sections upon the etiology and course of leprosy for the points of distinction between the two diseases.

It is with syphilis, however, that lupus vulgaris is most frequently confounded, and the differential diagnosis is sometimes

a very difficult one. The serpiginous forms of the late tubercular and ulcerative syphiloderms may sometimes resemble lupus very closely. The main points of distinction are as follows : Lupus is far slower in its course than syphilis, taking years to destroy as much tissue as syphilis will do in a few weeks. Lupus never affects the bony structures ; syphilis does, and often causes the loss of entire masses of bones, as of the vomer and nasal bones. The lupus papulæ are at first not elevated, are small, soft and appear in the scar ; syphilitic papules are always elevated, are larger and harder, and are never seen in the track over which the ulceration has passed. The scar of lupus is always white ; that of syphilis often pigmentéd. The ulceration of lupus usually starts from multiple points ; in syphilis they are single, or soon coalesce. The single ulcers of lupus are less extensive and less deep than those of syphilis ; their borders are not well defined, their secretion is slight and odorless, their crusts are scanty and brownish ; the edges of syphilitic ulcers are sharp, hard, and infiltrated ; there is much offensive secretion, and the crusts are often large, like oyster-shells in shape, and of a greenish color. The history of the two diseases is different ; lupus commences almost invariably during childhood, and runs an extremely chronic course ; syphilis usually begins only after adolescence, and is far more rapid in its march. Often also, other evidences of specific disease may be found upon the syphilitic patient. After due consideration of all these points a diagnosis ought always to be reached ; at all events, treatment for a fortnight or four weeks by specific remedies, and especially by the local application of the mercurial plaster, which has such brilliant effect in the late tubercular syphilide, should clear up all doubts. It ought never to be necessary, as Kaposi says, to make a provisional diagnosis of " lupus syphiliticus."

In any doubtful case, our main reliance is to be placed upon the presence or absence of the primary efflorescence—the characteristic soft, small, reddish-brown, subcutaneous papule. It will always be found present even in the more extensive and ulcerating forms of the disease upon the periphery of the patch.

Etiology.—Our knowledge of the etiology of lupus vulgaris is very imperfect. It has been thought to be intimately connected with scrofula—perhaps caused by it; indeed the French writers call lupus a scrofulide. I agree with those who consider that it is related to the ordinary scrofulodermata. It has nothing to do with syphilis, either hereditary or acquired; but is probably nearly related to tuberculosis.

Lupus vulgaris is never a congenital disease, though it appears first in early life. It is doubtful if it is in any way hereditary. In Germany the disease is very common; here it is a rare affection, occurring with about the same frequency as does lupus erythematosus. It occurs in both sexes; sometimes in the poor and the badly nourished, but at other times among those apparently in the best of health.

Prognosis.—As regards the condition of the general health the prognosis of lupus is usually good. In most instances none of the bodily functions are interfered with, no matter how long the disease may last. A certain proportion of cases die eventually from tuberculosis of the lungs.

We cannot speak so favorably as regards the local process. In most events the disease runs out its slow course in spite of all our efforts. Relapses are so frequent as to be almost the rule. New lupus nodules appear in the scars left from former attacks—coming perhaps long after the process is supposed to be at an end. The more localized the affection the better is our chance of influencing it by external remedies. The scars left are usually very deforming, and contractions of joints, destruction of cartilages, and closure of various orifices, as of the nostrils, are not uncommon.

Treatment.—In the treatment of lupus vulgaris we aim, in the first place, to prevent the development and spread of the disease, and, in the second place, to effect the removal of the morbid products that are already present. A large number of remedies have been employed to effect these ends; but they are all of them more or less uncertain, and some obstinate cases seem to defy them all.

To prevent the spread of the disease we may employ internal

medication, or we may endeavor to destroy the lesion in situ. As regards the treatment of lupus by internal remedies, but little good can be said as a rule to follow their use. Usually we cannot by their means either prevent the further spread of the disease or obviate relapses. Iodoform (gr. ss. in pill-form t. d.) has recently been employed by Besnier, and Neisser believes that he has seen good result from its use. Iodide of potassium has failed in almost all cases, as have also arsenic, iron, quinine, etc., except in so far as their general tonic properties have endowed the body with a greater power of resistance to the spread of the malady. Cod-liver oil, given for long periods of time, does undoubtedly do good in this way, even if it has not that specific effect upon the disease that has been claimed for it. It is well to combine a small quantity of pure iodine (gr. ss.— ℥ i.) or some iron or arsenic with the oil. I have lately employed the muriate of lime in twenty grain doses three times a day, and the sulphide of lime in small doses, with apparently good results.

General hygiene must not be lost sight of. The food should be of the best, and easily assimilable. The bowels should be kept regular ; and the good effects of mountain air, sea baths, etc., should not be omitted, when they can be obtained.

To destroy the virus of the disease, and to effect the removal of the morbid products already present, a great number of measures may be employed. We may endeavor either to cause absorption of the small-celled growth, or to destroy it in loco.

It is always well to make an attempt to procure absorption before proceeding to more radical and more violent measures. For this purpose we may use the iodized glycerine, as recommended by Richter, thus : Iodine and iodide of potassium, āā ℥ ss., glycerine ℥ i. This must be painted every other day over the affected part, which is then to be covered with rubber plaster to prevent the evaporation of the iodine vapor. But little pain is caused by the application, which is chiefly useful for l. exfoliativus. Mercurial plaster seems to be a remedy of considerable value in some cases. It is to be ap-

plied freely, and renewed every twenty-four hours. It is claimed that the macular form of the disease is cured sometimes by this means alone. Finally, it may be mentioned, the ointments of chrysarobin and of tar, oleum rusci, etc., have done good in some cases.

Kaposi denies ever having seen permanent benefit from any of these applications, and he claims that they merely do good by macerating the epidermis, softening and removing crusts, etc.

If now, we turn our attention to the more radical means at our disposal for the cure of lupus vulgaris, we must be careful, in our endeavors to remove the disease, not to cause scarring and deformity, more than that occasioned by the malady itself. This is especially the case, as lupus is more frequent among women than men, and occurs most often upon the face.

In a general way it may be said that chemical are better than mechanical means for the destruction of the new growth. No knife can search out the diseased tissue as well as some of the caustics mentioned below; and even if we decide to rely upon operative procedure, it is well to complete our work by the use of a cauterizing paste.

It is hardly ever necessary to employ destructive agents like caustic potash, Vienna paste, etc. They affect the healthy skin as well as the morbid tissue, and their action is unnecessarily severe.

One of the mildest, and at the same time one of the best, caustics we can employ is pyrogallic acid. This remedy, first introduced by Jarisch, acts only upon the lupoid tissue; normal skin is not affected by it. It possesses considerable penetrating power, and searches out the diseased tissue better than can the eye of the surgeon. Above all, the scars left after its use are smooth, thin, and white. It may be employed in a ten per cent. ointment, applied on a piece of linen to the affected spot and firmly bound down. The dressing should be renewed night and morning for three or four days, until the swollen tissues have become quite soft and black. The slough is then to be removed by means of a poultice, and the wound dressed either with a simple ointment, or better, with unguentum iodoformi.

This latter acts not only as a disinfectant, but also relieves the pain, which, however, is not severe, and only begins when the sloughs are being cast off. In three to four weeks cauterization is usually complete. It is generally necessary to repeat the process three or four times ; and in every case the recently formed scar should be protected from the renewed action of the acid. The healthy skin is only discolored, or perhaps slightly vesicated by it.

Another local application which has found considerable favor is that of iodoform. It is to be applied in powder thickly and uniformly spread over the diseased tissue. Where the infiltration is very deep seated the superficial layer of the epidermis should be removed by a 1 to 2 solution of caustic potash in water. The epidermis over the diseased tissue swells up and becomes transparent ; water may then be applied, and the epidermis gently removed. A dressing of powdered iodoform is put on, and over it a thick layer of cotton ; this need not be disturbed for a week. Suppuration does not occur, and the lupus nodules are quickly destroyed. Two or three repetitions are here also often necessary. The process is only painful during the application of the potash.

The solid stick of nitrate of silver is often useful in the treatment of lupus. It should be made quite sharp, and should be bored into all the nodules that are visible. Healthy tissues afford a degree of resistance to the pencil so much greater than the pathological one that there is no danger of destroying them. The cauterization should be done twice a week ; it causes considerable pain for several hours, but leaves smooth and white scars. It is especially useful for very circumscribed cases of the disease, and for lupus of the mucous membrane, and of the cornea and conjunctiva. It has the disadvantage of acting only upon the tissue immediately next to it.

Arsenical pastes are useful in many instances. It is especially to be recommended in the form of Cosme's paste, as modified by Hebra, viz.: ℞. Ac. arseniosi, gr. 20 ; cinnibaris, ʒ i ; ung. simpl., ʒ i. It should be applied upon linen, and renewed every twenty-four hours. There is considerable pain

and swelling by the third day. When the action of the caustic is complete, the lupus nodules appear as black, necrosed spots in the midst of otherwise unaffected tissue. Even the scar-tissue is not hurt by the paste. Cicatrization is very rapid, and the cicatrices obtained are very favorable. Absorption of the arsenic and poisonous symptoms rarely, if ever, occur; nevertheless, it is not wise to cauterize a surface larger than the palm of the hand at once.

The other caustics, as has already been said, are not so applicable. Caustic potash, whether used by itself or in the form of Vienna paste, forms a concentrated solution with the various fluids of the part, and destroys all the tissues, healthy and diseased, over a wide area. The pain is very great, the scar large and hard. Nevertheless, when it is desirable to destroy thoroughly a circumscribed patch of lupus upon some covered portion of the body, or when, upon the face, the nose or lip is in danger from the disease, it may be necessary to employ it. The same may be said of the chloride of zinc.

A number of mechanical means for the treatment of lupus vulgaris remain to be mentioned. The oldest, as well as the most radical of these is that of excision. It is very rarely to be recommended. The scar is necessarily deep and disfiguring; healthy tissue must be removed together with the diseased parts; and it offers no greater security against a return of the disease than other and better methods. Even in transplanted skin the nodules have made their appearance. Better results are obtained by the use of the sharp spoon, or dermal curette, as recommended by Volkmann. Only the morbid tissue can be scraped out by this means; the healthy parts resist the pressure. The operation should be done quickly and thoroughly; it may be necessary to freeze the skin, or even to anæsthetize the patient. The amount of pain caused is considerable; there is but little bleeding, and the scars are soft and white. Nevertheless, we can rarely penetrate with this instrument into the interstices of the tissues and remove all the new growth; and it is always advisable to use one of the above mentioned caustic agents after curetting.

The galvano-cautery is strongly recommended by Neumann. He employs a needle point of platinum, and pierces the individual lupus nodules with it while it is heated to a dull red. Neumann claims for the method a great advantage in rapidity and in absence of pain over the others, together with the best of results.

Scarification, according to the method of Balmanno Squire, has been recommended by Vidal and Besnier. The linear or punctiform method may be employed, and an ordinary lancet, or the instrument devised by Squire, may be used. The method is applicable to all cases in which ulceration is not present. Every two or three days another area of the diseased tissue is to be taken in hand and thoroughly "cross-hacked," the cuts to extend as deeply down as does the soft new-growth. There is but little pain, and the bleeding is easily controlled by pressure. Any simple dressing may be used after the scarification. This is one of the best means we possess of healing non-ulcerating lupus, and Volkman reports most excellent results from its use. The multiple division of the vessels causes anæmia of the part and an early tendency of the new-growth to undergo retrogressive changes; whilst the papules themselves are interfered with and broken up by the cuts. Auspitz recommends that the knife blade be dipped into an iodine-glycerine solution (1–20) before each cut.

In the very worst cases of lupus of the extremities amputation has been resorted to.

Intercurrent diseases and complications, such as caries, necrosis, erysipelas, etc., must be treated on general principles. We have no means at our disposal to prevent the occurrence of relapses.

SCROFULODERMA.

A number of morbid conditions of the skin occur in consequence of the presence of the general condition known as scrofula or struma. This vague and rather indefinite morbid state has of late received great attention; it has shared in the

renewed interest awakened by the labors of Cohnheim, Klebs, Koch, and many others, in the chronic infectious disease processes, especially tuberculosis. At the present time we regard tuberculosis, scrofula, and lupus as three very closely related, if not identical, conditions ; all due to the presence in varying parts of the system, and in different degrees of activity, of the specific infectious agent, the bacillus of Koch. Its etiological importance has been actually proven in almost all the ordinarily recognized tubercular and strumous processes ; and although not yet demonstated in lupus, it is probable that the proof of its activity there will soon be forthcoming.

Scrofulosis seems to stand in a middle position, as regards the other two conditions. In tuberculosis the infection is thorough and deep-seated enough to permeate the whole organism, and possibly destroy life within a short time. In lupus the virus is received in a comparatively unfavorable nidus, the skin, and is so situated as to offer the least possible opportunity for absorption and system infection. In scrofula the infecting organism penetrates the tissues to a varying degree, but is usually arrested in the lymphatic channels and glands. Then it grows and causes the various chronic inflammatory affections of the joints, skin, mucous membrane, and lymphatic glands which have so long been grouped together under the title of struma.

The granulation tumor, or granuloma (Virchow), which is the direct cause of the different destructive processes, is due to the activity of the infecting agent. In scrofuloderma these small-celled masses form tumors of varying size in the subcutaneous connective tissue, cause a very chronic inflammatory process in the superjacent skin, which becomes fused with the tumor, turns violaceous, and eventually breaks down to form the well-known scrofulous ulcers.

As a usual thing the lymphatic glands are the tissues affected, though the process may begin as a nodule or granuloma in the skin or subcutaneous tissue. The gland slowly increases in size in the course of months, none of the ordinary signs of inflam mation, such as redness, heat, or pain, being present. Having

attained a certain extent, the process may stop, the development of the infecting agent ceases, and the granuloma, in the course of time, undergoes fatty or cheesy degeneration or calcification. But more usually the tumor increases in size till it equals a large nut or an egg, the skin becomes involved, the new-cell growth breaks down, and the cold abscess opens, or is opened, and a thick cheesy pus mixed with blood is evacuated. There is little tendency to reactive inflammation or repair in the sluggish ulcers that are thus left. They are irregular or oval in shape, with edges deeply undermined, thin, and violaceous (since the original opening in the skin is always smaller than the subcutaneous granulation mass). Their bases are uneven and covered with pale, unhealthy granulations ; deep sinuses may run in various directions. If there is any scab, it is thin and gray, or brownish ; on removal the surface tends to bleed on the slightest touch. The discharge is usually scanty, thin, and watery. The flatter and more superficial ulcerations are from granulation masses in the skin or underlying tissues ; those from lymphatic glands being deeper, more rugged, and often sending processes deep down among the muscles and fasciæ. In some cases the infiltration is very widespread and the resulting ulceration very deep, so that even cartilage and bone may be destroyed.

Gradually and slowly cicatrization sets in, and an irregular, knotty, contracted, and often hypertrophic scar is left. The disease manifests itself most commonly upon the neck and under the lower jaw. There is usually only one or two such processes present, though there may be as many as six at once. Almost always other evidences of scrofula will be present, as chronic inflammatory affections of the mucous membranes, coryza, and conjunctivitis, or purulent otitis media, chronic joint swellings, old scars from previous lesions, etc., etc.

Several less common varieties of scrofuloderma are described. Thus, there is an eruption consisting of one to three large, flat, oval pustules situated upon an inflamed or violaceous base, which, when ruptured, show the appearance above described as characteristic of the scrofulous ulcer. They run a chronic

course, and leave soft, flat, superficial scars. Again, there are sometimes seen papillary or fungoid growths closely resembling lupus verrucosus. Their color is of a more or less bright, or dull violaceous red, their surface secreting pus freely. They are usually met with about the hands, are very chronic, and lead to deep seated ulcerations, which may affect even the bones, and cause great deformity. It is doubted whether these are really of the same nature as the ordinary scrofuloderma. Duhring describes still another form, which manifests itself as small, pin-head to split-pea-sized flat pustules upon a red or violaceous base, very like the small pustular syphiloderm, which dry up in a short time, and leave deep, punched-out scars. They appear irregularly, and all over the body, though they especially affect the face and upper extremities. Neisser regards this as an acne cachecticorum, and not as an essentially scrofulous process at all.

Etiology.—The essential cause of scrofula is, of course, the specific infecting agent; the bacillus. But a variety of other conditions have long been supposed to be influential, and undoubtedly do predispose the system to receive the materia morbis. The most important is, perhaps, that congenital "weakness" of tissue-life which we see in those born of strumous, or syphilitic, or tubercular parents, and in those who exemplify the evil effects of "in-breeding" in the human race. Negroes seem specially predisposed to it, and exposure to cold and wet, want of pure air, of sufficient food, and exercise, all seem to favor its development.

Diagnosis.—There are usually other symptoms of scrofulosis present in the patient; strumous affections of the joints, bones, eyes, and mucous membranes. The important differential diagnosis is from the gummatous ulcerations of syphilis. But the history, the occurrence singly, and often in persons of otherwise good general health (tertiary stage); the favorite location upon the long bones and forehead, and the non-origin in the lymphatic glands; the specific infiltration present at the margins of every syphilitic ulceration, no matter how extensive; the slight gummy secretion; and, finally, the effects of iodide of

potassium ; all these distinguish the ulcer of syphilis from that of scrofula.

Treatment.—Cod-liver-oil, syrup of iodide of iron, phosphorus, sulphide or muriate of lime, etc., are the class of remedies which will be found serviceable. Locally, the softening or cheesy masses must be removed with the curette, the thin, overhanging walls of the resulting ulcers cut away, and stimulating applications applied to the sluggish sores. Mercurial ointments; corrosive sublimate and alcohol lotions (grs. 1 to 2— ℥ i.); nitrate of silver ointment (1 to 2%); but best of all, iodoform as powder, ointment, or dissolved in ether (1 : 15). This last may be used as a spray for the nasal mucous membrane, etc. Cheesy lymphatic glands must be extirpated ; fistulæ scraped and revivified.

General tonic treatment, diet, exercise, etc., is important, and chlorate of potassium has proved serviceable in Shoemaker's hands.

MOLLUSCUM CONTAGIOSUM.

Syn.—Molluscum sebaceum ; molluscum epitheliale ; epithelioma molluscum ; molluscum sessile ; condyloma subcutaneum ; acne variolaform.

Definition.—Molluscum contagiosum is an affection of the rete mucosum, and is characterized by the appearance upon the skin of globular or wart-like papules and tubercles of a semi-transparent, whitish or pinkish color, varying in size from that of a pin-head to that of a pea.

Symptoms.—The affection was first described and given its somewhat misleading name by the English dermatologist Bateman. As usually seen, the molluscum consists of a firmly-seated or sessile round tumor, of about the size of a split pea. In color it does not vary from that of the part upon which it is situated, but it has a peculiar waxy, semi-transparent look, from the stretching of the skin over the little tumor. Its summit is flattened, marked by a slight depression, in the centre of which a small dark point, the opening of the follicle, can almost always be detected. It is moderately firm to the touch. A small

amount of pressure will immediately cause the contents of the tumor to exude. Under the microscope, the greasy mass thus obtained is seen to consist of flattened epidermic cells, fat globules, and fat crystals. Besides these, there are seen a varying number of the peculiar bodies known as molluscum corpuscles. These are rather large oval bodies, non-nucleated, and lying either free, or partially or wholly enveloped in an outer covering. They have erroneously been supposed to be peculiar to this affection, and to be the essential bearers of its supposed contagious properties.

These peculiar little tumors may be present singly, but they usually appear in considerable numbers upon some limited area of the body. They are commonest, perhaps, about the genitals, on the penis, scrotum, and labia; next most frequently upon the face and neck; and more rarely upon the flexor surfaces of the extremities. One only, or from twenty to one hundred, may be present. In an example of the affection, where the sheath of the penis and the mucous membrane covering the glans was involved, some sixty, in various stages of development, were present. The whole organ, from tip to root, was studded with them; and not a single tumor was present upon any other portion of the body.

The little tumors grow very slowly, and when formed, may persist for months and years. Some undergo spontaneous absorption; others are accidentally torn out by scratching; and still others cause a certain amount of inflammation in the surrounding tissues, and are cast off. In these latter cases a scar is left, which may be of importance when the disease affects the other portions of the body. No subjective symptoms of any kind are present.

The affection occurs oftenest in children. It has been rather frequently noticed around the genitals in connection with gonorrhœa, and upon other portions affected by prurigo, eczema, hyperidrosis, etc. The disease never occurs upon the palms of the hands or the soles of the feet.

In spite of its name, the malady is in no way contagious. It has been observed to occur in several members of the same

family, etc. ; but all attempts to inoculate it have failed. Nor would the nature of the affection, so far as we know it, lead us to presuppose any such quality for it.

It is a rather rare affection.

Anatomy.—The pathology of molluscum contagiosum has

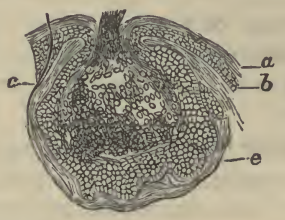


FIG. 64. Section of a small molluscous tumor ; *a*, corneous layer ; *b*, rete ; *c*, hair ; *e*, periphery of tumor.

been the subject of much discussion. The older authorities claimed it to be an affection of the sebaceous glands ; but according to most of the recent authorities, the seat of the disease is in the rete mucosum. The molluscum corpuscles before mentioned are epithelial cells that have undergone a peculiar degeneration.

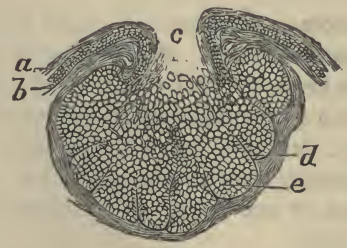


FIG. 65.—*a*, corneous layer ; *b*, rete ; *c*, central orifice corresponding to follicle orifice ; *d*, inter-acinous connective tissue ; *e*, changed rete-cells.

According to Virchow the disease begins by a hyperplasia of the epidermis lining the hair-follicles. The cells upon the free surface of the epidermis surrounding the follicle soon become affected, and the epidermis growing downward into the cutis, the successive layers of new formed cells become

each in turn the seat of the morbid change. Kaposi does not regard the occurrence of the molluscum corpuscle as peculiar to this malady, but states that they are formed in other diseases ; in fact, wherever epithelium cells lie long unchanged, as in epithelioma and comedo. The rete cells first become granular, and then vacuolated ; the granules then fuse into a homogeneous mass, and the nucleus of the cell is lost. Gradually

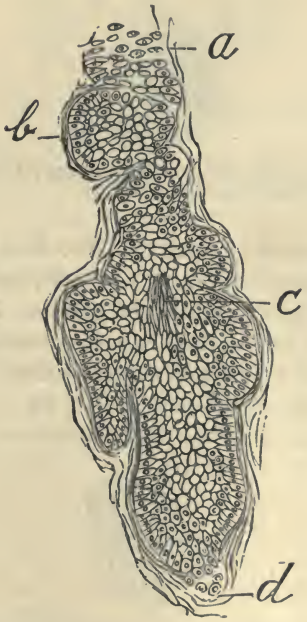


Fig. 66.—Commencement of the tumor from the external root-sheath of the hair ; *a*, neck of the follicle ; *b*, changed rete cells ; *c*, part of previous hair shaft ; *d*, base of follicle.

the new substance fills the cell and renders it globular in shape; but the horny capsule remains unchanged.

I have examined a considerable number of molluscum tumors, and have never found them to be connected with the sebaceous gland, and they are certainly not retention tumors of these structures. They arise from the rete by a process of prolifera-

tion, associated with a tendency to a peculiar transformation of their substance. In all of my specimens the disease commenced in the rete cells of the external sheaths of hair (see Fig. 66). The change in growth may commence near the neck or near the root of the hair. After the tumor has existed a time, the hair falls out, as the proper kind of cells for its formation are no longer produced. The orifice of the hair follicle makes the

FIG. 67.—Cells from peripheral part of an acinus; *a*, surrounding connective tissue; *b*, rete cells gradually undergoing change.

central opening above referred to. (See Figs. 64 and 65.) The contents of the tumor never, at any time, present the appearance of the fatty epithelial cells of glands. In fig. 64 and 65 are presented sections of two tumors showing the acinous-like form of the tumors and the central orifice. In fig. 65 the arrangement of the cells is shown. In fig. 67 are represented the first few rows of cells. The transformation commences

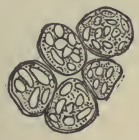


FIG. 68.—More or less completely changed cells.

already in the first row. The cells of this row are much larger than the normal cells of the external hair sheath. As the centre of the tumor is approached, the nucleus disappears and the cell body becomes completely transformed, except the peripheral part. In fig. 67 are represented some cells in which the nucleus has vanished and the transformation process is far advanced. In fig. 68 the cells are almost completely changed, except the peripheral part. Those shown in fig. 69 represent the so-called

molluscum corpuscles. The exact nature of the transformation is not known. I have placed this affection among the new growths, to which, in my opinion, it undoubtedly belongs.

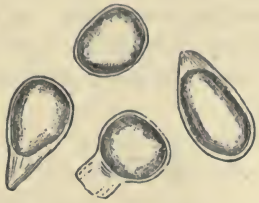


FIG. 69.—Molluscum corpuscles from central part of tumor.

Diagnosis.—The only disease with which this affection is liable to be confounded is molluscum fibrosum. Yet there are distinctive points enough to prevent our ever making a mistake. Thus, as regards location, molluscum contagiosum occurs often about the face, while molluscum fibrosum is often spread over the entire body. The tumors of molluscum contagiosum are usually comparatively few; they are waxy and semi-transparent, are prominent and superficial; those of molluscum fibrosum are larger and more numerous, they are hard and fibrous, and are seated deep down in the skin. In molluscum contagiosum the opening of the follicle can always be seen as a minute black point situated in a depression at the apex of the tumor; nothing of the kind is visible in fibrous molluscum. Finally, the disease under consideration usually begins very early during life, while molluscum fibrosum most commonly affects adults.

Prognosis.—The disease tends eventually to spontaneous recovery. Once thoroughly removed the bodies do not return; but unless the bases be well cauterized another molluscum will form from it in time.

Treatment.—Local measures only are needed. We may proceed at once to the more radical means, or we may endeavor first to procure absorption of the little tumors. Friction with tincture of green soap, or white precipitate ointment, or sulphur applications, may be used for this purpose, especially when the

tumors are numerous. But more decisive measures are usually necessary. If there are but few tumors they may simply be squeezed, or be scraped out with the sharp spoon. Often free incision over the top of each tumor and removal of the whole cell wall with forceps, forms the best mode of treatment. The base should then be cauterized with nitrate of silver. The ligature may also be tried, followed by local cauterization.

LEPRA.

Syn.—Elephantiasis græcorum ; lepra veræ ; leontiasis ; satyriasis ; leprosy ; Fa Fung (China).

Definition.—Lepra is a chronic, malignant, contagious, parasitic disease, the lesions of which are due to the development of inflammatory new growths in the skin, the mucous membranes, the connective tissue of the peripheral nerves and the internal organs. Its cutaneous manifestations consist of yellowish red or dark-brown discolorations, reddish and bronzed tubercles and infiltrations and various paræsthesiæ. It causes or predisposes to various affections of the internal organs, and eventually occasions death either by these affections or by the specific marasmus of the disease.

History.—Leprosy, one of the most interesting of the diseases with which we are concerned, possesses a history that can be traced back almost as far as written history itself extends. Though rarely seen at the present day in the more civilized portions of the globe, it is in many countries a very common disease, and certainly merits our careful consideration.

Lepers exist in Norway, Iceland, Spain, Portugal, Italy and Southern Russia. In the east of Europe, however, the disease has entirely disappeared ; so entirely, that until very recently it was so little known in the medical centres as to have become almost mythical. It rehabilitation is largely due to the Norwegian physicians, notably Boeck and Daniellsen, and to European surgeons practicing in the East-India and China, where leprosy still flourishes.

At the present day its geographical distribution is a peculiar one. Its chief seat is in India, where it is found everywhere from Ceylon to the Himalayas. It prevails extensively in China, especially in the southern provinces; and Chinese coolies bring it wherever they are extensively employed, as in Australia and California. It is well known in Japan. It is found in South Africa at the Cape Colony. In Asia Minor it exists in Syria, chiefly at Jerusalem, though there are lepers at Damascus, and exclusively among Mahometans. It prevails in all the islands of the Archipelago and on the Ionian Islands; in Crete alone there are over 1,000 lepers to a population of 250,000. Throughout Central Asia it is common among the wandering Mongol tribes, as among the Persians and Afghans. In Europe, besides the northern and southern peninsulas already mentioned, it prevails to a small extent in Turkey, especially in Thessaly and Macedonia.

In our own hemisphere its chief seat is in South America, in the Guianas, Brazil and the West Indies, especially in Jamaica and Barbadoes, where it is very common. In North America it is found in California among the Chinese, and among the Norwegian colonies of the Northwest. A small leper colony also exists at Tracadie in New Brunswick. Cases have also been reported from the Southern States, notably no less than thirteen (black and white) from Charleston, S. C. There are probably at least 100 lepers in the United States, and it is upon the increase here. Cases are occasionally seen in New York; at least three well marked ones have been inmates of the dermatological wards of Charity Hospital within the last few years.

A notable instance of the power of extension possessed by lepra under favorable circumstances, is afforded by the Sandwich Islands. Forty years ago it did not exist there; now one-tenth of the population are lepers. The Chinese are responsible for its introduction there.

This widespread distribution accounts for the great variety of local names by which lepra is known.

Symptoms.—Lepra is a constitutional disease which affects

the entire system, and whose manifestations are seen in almost all the organs of the body. An essential feature in its life history is its extreme chronicity, and in this it exceeds even syphilis, the disease with which it is most frequently compared. Many years usually elapse after the first symptoms before the malady reaches its termination, and the patient often succumbs to intercurrent disease before he has had time to die of leprosy. Nevertheless, the disease shows a regular and orderly progression, and goes from bad to worse; for, unfortunately, in spite of the utmost efforts of our therapeutics, all that it has yet been possible to attain has been to affect a temporary stay in the march of the malady. Goldschmidt, as the result of his extensive observations of the disease upon the Island of Madeira, places its average duration at twelve years, while the most chronic case he saw was one that had existed twenty-two years. It is doubtful if it ever terminates until several years after its first outset.

Various premonitory symptoms occur before the actual invasion of the disease; but they are indefinite in character, and would only give rise to suspicion in localities where lepra is endemic. They consist of general lassitude, insomnia, gastric disturbances, diarrhœa, irregular fever, etc., etc.; in fact, such symptoms as might be ascribed to various trivial derangements, or mark the advent of many diseases. But they are always present, no matter what form the malady is going to take, and they may last for weeks, or months, or even years before the real symptoms of leprosy come on. One peculiar symptom, however, which very commonly occurs during this preliminary period, is the occasional appearance of bullæ, like those of pemphigus, upon the skin. They may appear very seldom and never be present as more than one at a time; or one or more may arise every day. Each bulla persists for a few days, and then dries up. Another symptom belonging to this period has been described by Dr. D. B. Simmons, and is regarded in Japan, where leprosy is common, as pathognomonic, and that is a deep flushing or lividity of the face which comes on after indulgence in wine or spirits. It is looked upon in the East

as sufficient for a diagnosis of the disease. Still another marked feature of this stage are the febrile attacks which come on from time to time. They are quite severe, and are usually mistaken for malaria. After a varying time, then, of what we may justly call the prodromal stage, the real disease or stadium eruptionis sets in, and its manifestations may be various. The skin symptoms are usually the earliest to appear, and generally remain the most prominent feature of the malady; hence the propriety of classifying a systemic disease under the head of affections of the skin, and considering it in a work upon dermatology. These lesions, like those of syphilis, appear in the most varied forms, and in accordance therewith we distinguish different phases of the malady.

Usually but two forms of leprosy are spoken of, the tubercular and the anæsthetic, but Kaposi, and I think correctly, recognizes three, viz.: tubercular, macular, and anæsthetic leprosy. Under one of these three forms the disease begins, but no advanced case exhibits any one of them without admixture of one or both of the others.

1. *Lepra tuberosa.*—Lepra tuberculosa, or tubercular leprosy, commences as moderate tubercles or larger tuberculated masses situated in the skin, prominent and circumscribed, varying in size from that of a finger-nail to areas as large as a whole hand, irregular in shape, reddish in color, and fading under pressure at first, but later becoming of a more permanent dark sepia, brown or bronze color. The infiltrate forming these masses is firm, and it is more or less painful upon pressure. They may appear anywhere upon the body, even upon the palms of the hands and soles of the feet; but they have a special predilection for the face. They are common also upon the legs, buttocks, anus, etc. Besides the tubercles, there is more or less general œdema of the skin in their neighborhood. It takes usually a period of months or years before the individual tubercles have coalesced so as to form the infiltrations so characteristic of the disease.

When these masses appear upon the countenance they cause the peculiar facies to which the disease owes its name of leon-

tiasis. They usually occur upon the forehead, parallel to the eyebrows, upon the cheeks, and upon the malar bones, and give a heavy, scowling, leonine aspect to the face. Upon the nose, chin, and cheeks, etc., they may occur as irregular violaceous shining tubercles, or as more extensive raised and bronzed patches. The lips are infiltrated and swollen, and project forward horizontally, and the ears, especially the lobules, are thick and stiff. These appearances, together with the leonine brow and the generally stupid, sullen aspect, present a characteristic and not easily forgotten picture of the disease.

FIG. 70.—Case of lepra tuberosa. (Neumann.)

The lymphatic glands of the face and body are greatly enlarged, and are visible as prominent swellings. All over the body the tubercles, with the accompanying œdema, are liable to occur; when on the palms or soles, they sometimes look remarkably like the tubercles of syphilis. They are often painful, sometimes to such an extent as to completely disable

the patient, who hardly dares move to perform the most necessary acts of life. Not only the skin, but various other portions of the body, may suffer from these localized infiltrations of leprous material. The various mucous membranes, and especially the naso-pharyngeal, are often affected; tubercles appear in the mouth, nose, throat, upon the epiglottis, and in the larynx. When they break down, as many of them eventually do, indolent ulceration and extensive destruction of tissue occurs. The nose sinks and the voice becomes rough and toneless. Aphonia, and even œdema of the glottis, is liable to occur. The tongue is infiltrated, swollen, and fissured, and a peculiar sickly, sweetish odor is perceptible in the breath. Taste and smell are usually preserved; tubercles may appear upon the cornea, and conjunctivitis, keratitis, pannus, perforation, loss of lens and total destruction of the eye-ball eventually occur. Atrophy of the testicles has been noticed in many cases.

Once formed, the tubercles persist for a long time. They but rarely undergo any changes, and the general health—at all events, in the earlier stages—may be quite good and the mental functions seem unimpaired. Almost invariably some of the other lesions are found upon the skin in conjunction with the tubercles. They shall be considered further on. Sooner or later, as the disease progresses, the tubercles change, usually in conjunction with the phenomena of an attack of erysipelas, to be mentioned below. Some may undergo absorption, leaving behind atrophied, pigmented spots; but more commonly the cell proliferation which has existed so long begins to break down, perhaps from accidental, mechanical injuries.

The life of this tissue of low vitality is compromised by the slight additional blood stasis of inflammation, and ulcerations, the leprous ulcers, result. Occasionally the process may be more acute, and death *en masse* occur. It is in these latter cases that the lesions of *lepra mutilans* are seen; the ulcerations may open into or cause suppuration of the various joints, knee, ankle, or fingers and toes; or necrosis of bone occur, and whole parts, as a hand or foot, may be lost. Nevertheless,

these ulcerations are no more an essential part of the disease than is the pneumonia which so often ends it ; they are accidental, occurring from various causes.

More or less fever is noticed at various times during the progress of the disease, and intercurrent attacks of erysipelas are common. During such an attack of pseudo-erysipelas, the disease usually makes a sudden forward movement, a varying number of new tubercles appear upon the part, usually the face ; but sometimes an extremity is affected, and the course and symptoms of the disease vary in no way from an ordinary case of erysipelas, save in the extreme slowness with which reaction takes place. Sometimes a number of tubercles are absorbed and disappear during such an attack. In one of the cases at Charity Hospital the man had, every year, one or two attacks of erysipelas of the face, with very high temperatures, after which some change would always be noticed in the tubercles ; some of the old ones had gone away, but more new ones had appeared. Recovery was always very slow indeed, though between the attacks the man, who worked as a deck hand upon the island steamboat, seemed to enjoy the most robust health.

Irregular febrile attacks also occur without the external signs of an erysipelas, and usually mark the invasion of some internal organ by the disease. The immediate prognosis is worse after each febrile attack. The fever is irregular and mostly intermittent in type. It is the real leprous fever.

Eventually the skin lesions increase in number and severity, the internal organs become involved, the mucous membranes, the glands, the testicles, and the eyes become affected. Mental symptoms appear, the patient becomes helpless, and suffers from profuse diarrhœa, and at last many of them are carried off by pneumonia, phthisis, Bright's disease, or pleurisy. In other cases the attacks of fever occur seldom, and are of slight severity, the affection of the skin progresses very slowly and the patient dies of other diseases. It is by no means certain that the affections of the internal organs are leprous in character, though Cornil has lately found in the cirrhotic liver, and Hansen in the cirrhotic spleen of a leper the bacillus lepræ.

However good the general health at any one period may be, there comes a time when the disease begins to tell upon the patient, and he falls into a condition of general marasmus. It is often eight to ten years before this occurs. On the other hand, the phase of the disease may suddenly change, and a patient who has suffered from tubercular leprosy for years may have later anæsthetic leprosy or lepra nervorum.

2. *Lepra maculosa.*—This is often the first form in which the leprosy makes its appearance, though it rarely remains long its sole manifestation. It appears as smooth, glistening, slightly infiltrated patches, reddish or brownish in color; or as dark pigmentations of the skin, either punctate or in areas of greater or less extent. They are found all over the body. When they are numerous, these pigmented patches form a strange contrast to the normal skin between and around them. L. maculosa is almost always associated either with tubercles or with anæsthetic areas. In fact, the pigmented patches are often coextensive with the paræsthetic ones. By many authorities the macules are looked upon, not as a variety of cutaneous lepra, but as one of the trophic changes following the nerve lesions. These other trophic changes are indeed often found in conjunction with the macules, the pigmented skin being atrophied, smooth, and shining. Accidental ulcerations, etc., may appear on these discolored patches.

The ultimate symptoms and course of macular leprosy differ in no way from those of the tubercular or anæsthetic forms. Destructive processes, ulcerations, loss of members, internal complications, attacks of leprous fever and erysipelas, occur in this, exactly as in the tubercular form.

3. *Lepra Anæsthetica.*—Lepra nervorum (Virchow), elephantiasis glabra (Böck) or anæsthetic leprosy, may occur in conjunction with the other forms, but often appears as the very earliest manifestation of the disease. For purposes of convenience we may divide its course into three stages, and its symptoms into three sets—not that they are be seen sharply defined and divided from one another—even the whole nerv-

ous leprosy is not a distinct entity, but represents a type of the disease in which a certain set of phenomena are the most prominent. But the divisions will be of use to aid us in classifying and arranging a rather numerous and varied set of appearances.

We therefore speak of a prodromal stage of anæsthetic leprosy—a stage of commencing neuritis; of an "eruptive" stage—in which the effects of the nerve-lesions become fully developed; and a permanent stage, with the trophic lesions. The symptoms themselves may be considered as sensory, or motor, or trophic ones; and, in addition, there are the morbid appearances of the peripheral nerve trunks. The sensory and motor symptoms present no special features; but the trophic changes are of considerable interest. They consist of lesions of the skin, namely atrophy (glossy skin), pigment anomalies, and the appearance of bullæ; of atrophy of the muscles from destruction of the contractile elements; and of affections of the bones and joints, necroses, etc.; these latter being usually, in part at least, due to direct mechanical injuries.

During the prodromal stage the symptoms of nerve irritation are prominent. The patient complains of formications—of sharp lancinating pains, or of excessive sensitiveness to the touch of certain areas of the skin. The integument may be reddened or slightly œdematous, and even at this early stage various superficial nerves are swollen and painful. The areas affected may be many or few, large or small, and do not usually correspond to any special nerve distribution. They are liable to change their seat without appreciable cause.

By the time the second stage comes on these irritation symptoms have entirely subsided, and the paretic and anæsthetic ones appear. The pains and hyperæsthesia remit, and the patient begins to lose the sensibility and power of motion of certain parts. Irregular patches of anæsthesia appear upon the trunk and limbs; sometimes coinciding with discolored or tubercular areas; but often coming in places where the skin looks perfectly normal. These sensationless areas gradually extend and coalesce, and at last cover large tracts of the surface of the body. Sensibility to pressure, pain, and temperature

are lost, and eventually a more or less extensive, but complete, anæsthesia justifies the name of this form of the disease.

This anæsthesia of lepra is peculiar in more than one respect, and in the section upon the pathology of the disease some attempt will be made to explain it. It is irregular, and rarely coincides with any definite nerve tract. Anæsthetic and normal patches lie unevenly distributed, side by side, or even within one another. When the trophic changes have occurred the anæsthesia is permanent and complete.

These trophic changes constitute the third set of symptoms, and are those that more particularly mark the last stage of the disease. They do not differ in their nature from those that occur in ordinary neuritis. To them is to be reckoned the bullæ (pemphigus leprosus) which sometimes make their appearance so suddenly upon the skin, springing up in the night and reaching maturity before morning. They rarely appear other than singly, though there may be a constant succession of them; their size varies from that of a lentil to that of the palm of the hand; their contents are clear or yellowish. After persisting for a few hours, or a day or two, they break and leave behind them either shallow excoriations, or white or pigmented spots, which almost invariably become anæsthetic as the inflammation of the nerve-stems is succeeded by atrophy. Though essentially a part of the later stages, isolated bullæ of this kind may appear even in the prodromal period.

The pigmentary changes consist of smooth, perhaps slightly elevated, patches of varying size and shape, of a reddish or dark-brown color—a condition hardly to be distinguished from what we have described as macular leprosy. More rarely the change consists in the disappearance of pigment from more or less extensive areas of the skin; hence the term vitiligo applied to this phase of the disease by the classical physicians.

The integument itself is atrophied, thin, wrinkled, and smooth (l. glabra); it is dry from destruction of the sweat glands. The finger points are clubbed; the nails are fissured and brittle; the hair loses its gloss, and at length falls out over the whole body.

The changes in the muscles consist of a gradually progressing paresis with atrophy. This atrophy may be partly due to the motor paralysis, but that it is not wholly so is shown by the fact that even in the early stages we find the fibres themselves swollen and their striæ indistinct, and the interstitial connective tissue increased in amount. As the paresis progresses, more and more of the muscles of the hand and foot, arm and leg, face and trunk become involved. The countenance becomes expressionless, or is deformed by the unbalanced action of the unaffected muscles; the eyelids and lips droop, and the tears and saliva escape and flow away over the surface. The strength of the limbs gradually decreases; and, from the preponderance of the flexors, the hands assume a permanently bent position. The gait becomes weak and dragging, and eventually the patient is reduced to utter helplessness.

The condition of the larger nerve trunks now attracts our attention. Sooner or later, often quite early in the disease, some of these nerves become tender and swollen in places. Especially is this the case with the ulnar nerve, upon which the swelling behind the internal condyle may be so marked as to be visible to the eye. These swellings are painful, either spontaneously or on pressure, and they form a prominent symptom in many cases of the disease. After the ulnar, the peroneal nerve is most commonly affected. The neuritis which causes this as well, as all the other symptoms of nervous leprosy, will be fully considered in the pathology.

At length, as in other forms, the appearances grouped together as l. mutilans set in. Indolent ulcerations appear around the joints, and extend into the deeper parts; articulations are opened, bones are destroyed; the muscles and fasciæ are laid bare, and whole parts may drop off. It is needless to recapitulate the various other changes that occur in the eye, the mucous membranes, etc.; they are exactly the same as those occurring after l. tuberosa. Pyæmia and erysipeloid complications are common; attacks of leprous fever occur as before.

Thus the patient gradually sinks. The sexual functions are

depressed from the beginning, assertions and a name of the disease (satyriasis) notwithstanding. The intellect becomes dull; the sick man lies quiescent for days at a time. His bodily functions must be attended to like those of a child. Sinking vitality marks every manifestation of life; the pulse is slow, the heart feeble, the breathing shallow. At length death relieves them from their sufferings. The end is usually due to complications, to diarrhœa, pneumonia, pleurisy, Bright's disease, tetanus, etc. The anæsthetic is the more chronic form of the disease, and often lasts 15 to 20 years from the first appearance of the symptoms.

Complications.—Of course, in a disease of such extreme chronicity many complications of the lesions of the skin may occur. Thus there has been noticed the coincident occurrence of favus, of eczema universalis, of syphilis, of molluscum fibrosum, of elephantiasis arabum, and of scabies. Especially common among the lepers in some countries is that inveterate form of the itch, known as scabies Norwegica. Syphilis is the only one that would probably cause difficulty in its recognition.

The various internal complications have been repeatedly mentioned, and do not present any special features. Pneumonia, pleurisy, pericarditis, peritonitis, chronic hepatitis, affections of the eyes, pyæmia, etc., are seen. Very frequent are attacks of erysipelas, especially e. faciei, each onset of which is followed by an advance in the lesions of the skin.

Anatomy.—Much new light has been shed upon the pathology of leprosy by the labors of Daniellsen and Böck, Virchow, Bergman, Kaposi, and others. Thanks to their efforts we possess a pretty definite knowledge of the pathology of lepra in all its forms.

Now the essential point is, that all the manifestations of the disease are caused by the presence in the tissues of the specific bacillus lepra. This micro-organism will be described, and its pathological value discussed, in the etiology. The lesions of lepra are due to a new growth caused by the bacillus; a new growth composed of numerous small round cells, more or less

closely aggregated together. In fact, each lesion is a granulation tumor, and is, in so far as its anatomy is concerned, in very intimate relationship with the lesions of lupus and syphilis. The cells themselves do not differ from those of lupus, except, perhaps, that they are slightly larger, and are not so distinctly encapsulated. Syphilis, lupus, and lepra, all three are granulation tumors, so called, and all three tend either to absorption or eventually to disintegration. In lupus the process is slower than in syphilis; in lepra it is slowest of all.

This small-celled accumulation begins in the walls of the bloodvessels, and spreads thence to the rete, where it grows and forms the tubercles so characteristic of the disease. Gradually the new growth infiltrates the various structures of the skin, and by pressure and interference with the blood supply, causes destruction of the sweat and sebaceous glands, the hair follicles, etc. The cell mass is not circumscribed or encapsuled; it spreads through the tissues, though a varying amount of new connective tissue is formed, and is seen as fibrous bands running through the infiltrated mass. When all the structures of the skin are infiltrated by the small-celled collection, and the vascular supply becomes compromised, fatty degeneration of the new cells occurs; the mass breaks down, and the sluggish ulcerative processes begin. As before stated, the inflammation caused by some accidental injury usually occasions the final process. Like the infiltrations that preceded them, the ulcers run a markedly sluggish course. Not only the skin, but the mucous membranes, especially those of the nares, fauces, larynx and trachea are also liable to this infiltration. The ulcerations in the nose may destroy the septum and cause flattening of the organ; perforations of the palate occasionally occur. Laryngeal stenosis may occur from the tubercles, or œdema of the glottis renders tracheotomy necessary during the destructive stage.

As regards lepra nervorum, no lesions of the central organs have yet been positively demonstrated. In the peripheral nerves there occurs a neuritis, at first acute and liable to disappear, later chronic and permanent. The fibres themselves

are not at first affected, for it is an interstitial neuritis, occurring perhaps only in microscopic spots. As the inflammation progresses, a connective tissue new growth gradually presses increasingly upon the nerves, and ultimately fatty degeneration and destruction of the fibres occurs. Upon post-mortem we find many of the nerves, especially the ulnar, median, radial, musculo-cutaneus and peroneus, swollen along their whole length, or in places hard to the touch, and of a grayish or smoky tint. In anæsthesia of the face the Gasserian ganglion has invariably been found thus affected.

There exists some difference of opinion as to the exact nature of the new growth, it being regarded by some authorities as a true leprous infiltration, analogous to that of the tubercles; others look upon it as a simple interstitial neuritis, differing only in unimportant particulars from an ordinary nerve inflammation. The specific bacillus has not, to my knowledge, been demonstrated in the affected nerves.

The modifications of cutaneous sensibility which form so prominent a feature of the disease are fully explainable by the nerve lesions. The hyperæsthesia of the skin marks the stage of inflammation and irritation; the anæsthesia, that of pressure and nerve degeneration. The process in the nerve tissue being an extremely irregular one, the paræsthesias are also irregular in their development. The first acute processes doubtless often end in resolution, and hence the passing hyper- and anæsthesias. Later processes are profounder, depend upon actual degeneration, and are permanent. The trophic changes are exactly similar to those of neuritis from other causes. According to Kaposi, however, a part, at least, of the nervous phenomena is due to the direct pressure of the cutaneous infiltration upon the terminal nerve filaments themselves.

Various lesions of the central nervous system have been reported by Neumann, Langhans, Rosenthal, etc., including softening of the cord, and myelitis of the posterior horns. But their occurrence has been denied by Neisser, Leyden, Hillis, and other equally trustworthy observers, and they were probably merely accidental complications.

All the internal organs may be, and in advanced cases are, affected with the same small-celled infiltration of the connective tissue and subsequent parenchymatous atrophy. The pathological process is a general one, and the lungs, liver, spleen, kidneys, testicles, intestines, eyes, etc., have been found affected. Here also the bacillus has been found. When speaking of leprous fever I stated that each new attack of fever probably marks the advance of the infecting bacillus and consequent small-celled new growth into fresh territory—sometimes of the skin, sometimes of the internal organs.

Besides these, the lesions of the various intercurrent affections from which most patients suffer, and of which many die during the course of this most chronic disease, will be found. Thus tubercular deposits in different organs, especially the lungs; chronic inflammatory processes of the liver, or kidneys, amyloid degenerations; the lesions of pyæmia, etc., are often present.

Etiology.—The etiology of lepra has long been the subject of dispute, and it is only quite recently that light has been thrown upon it. Thanks to the labors of Hirsch, Neisser, and others, we do to-day possess some definite knowledge regarding its causation. We know that it depends upon the introduction into the system and the multiplication there of a specific micro-organism—the bacillus lepræ.

Leprosy occurs in the most various races, in different climates, and under the most divergent habits of life. It prevails in the tropics of America, as in Northern Iceland; among Africans, as among the Chinese; in the lowest classes of Madeira as in the highest of Rio Janeiro. It is improbable that it can be due to any of the various climatic agencies to which its onset has been ascribed. Thus it has been claimed to be due to atmospheric, to telluric influences, to malarial agencies, etc. But lepra exists in inland as well as in littoral districts, in mountainous as well as in flat and sandy regions, in moist as well as in dry climates; it is at home among the mountains of Norway, in the swamps of the Crimea, and on the fertile plains of India.

Improper diet has next been invoked as a cause, especially the consumption of salted or stale fish, and of fish-oils. This is the reason assigned by the natives of Norway and Iceland for the prevalence of the disease among them. But the Egyptians, the Mexicans, the Hawaians, do not live upon such food, and amongst all these, the disease is endemic and finds to-day its most chosen seats.

Bad hygienic surroundings, foul air, filthy dwellings, improper personal habits are supposed by some to be influential in causing lepra. But these conditions prevail more or less everywhere, and leprosy does not ; they are most strikingly exemplified in the large European cities, where leprosy is virtually unknown. On the other hand, in some parts of the world, as in Brazil, the richest and best-cared-for classes furnish a proportionately large number of cases.

Contagion is the next factor that demands our attention, and the immense mass of the evidence in our possession shows that the disease may spread in that way. Many cases are recorded in which persons with absolutely no leprous family history, and who have resided but a short time in infected districts or together with a leper, have contracted the disease. Thus one of the cases in Charity Hospital has resided but a short time, one year, in Bermuda ; his parents and grandparents had been absolutely healthy, and had lived all their lives in the Northern States. Kaposi relates an analogous case, of an Italian and his wife, whose history was perfectly clear from taint, and who contracted the disease during a two years' sojourn in Egypt. On islands and other isolated districts the disease has spread in a manner which leaves contagion as the only available hypothesis. Thus, in 1859, the two first cases of leprosy ever known upon the Sandwich Islands occurred in the persons of two Chinese coolies ; and the cases were accurately observed by Hillebrand. In seven years (1866) the disease had spread to such an extent that the Government found it necessary to interfere, and ordered the segregation of the lepers upon the Island of Molokai. There were then found 400 lepers. In 1881 there were 800 lepers on Molokai ; whilst it was esti-

mated by the Honolulu Board of Health that there are at least 4,500 lepers upon the Islands, comprising one-tenth of the total number of inhabitants. It is worthy of note that the natives have obstinately stood in the way of the authorities in their efforts to limit the disease, and have afforded leprosy, as they did syphilis, all possible opportunity to spread. In Trinidad, while in 1805 there were three lepers, in 1878, with but four times as many people, there were 860. On the neighboring Island of Curacoa, meantime, where stringent measures have long been in vogue, the disease is on the decrease. The same is happening in Norway, and Western and Central Europe undoubtedly owes its freedom from leprosy to the rigid segregation that followed the terrible epidemics of the disease in the 13th and 14th centuries. Nevertheless, the fact that the contagiousness of leprosy is not of the ordinary active kind is evidenced by the fact that lepers have lived in our general hospitals for years; they have mixed freely with the patients, in many of whom the ordinarily enumerated predisposing conditions, constitutional disease, bad hygiene and bad personal habits, were certainly present; and yet they have not communicated the malady to others. Julius Goldschmidt could find only one example of pure contagion, of origination of the disease in a person of a healthy family and association, in Madeira, where there are 600 lepers in a population of little over 100,000. The general contagious nature of lepra is recognized, however, in almost all its endemic sites; hence the segregation of the lepers so universally adopted.

All authorities agree in considering leprosy contagious by inoculation. The accounts of the origin of the disease in localities where it is prevalent nearly all give this history. Thus the first case of the disease in New Brunswick occurred in a woman who was said to have contracted it from washing the clothes of some leprous French sailors. In no other way than by contagious inoculation can we reconcile the facts, on the one hand, of the immunity of those who though living under the same roof with lepers, yet exercising ordinary precautions, entirely escape the disease; and on the other, of the phe-

nomenal spread of the disease in the Sandwich Islands, where the universal immorality in sexual matters and the prevalent disbelief in the inoculability of the disease, makes them excellent breeding beds for it, as also for syphilis. It is of course difficult to find thoroughly authenticated instances of this mode of origin, which is not wondered at when we consider the absence of any marked inoculation lesion, the long prodromal period, and the slow course of the disease. Experiments upon the lower animals have until now invariably failed to reproduce lepra. Only very recently, extensive work has been done by Köbner of Berlin, Annauer Hausen of Bergen, and Damsch of Göttingen in this direction ; various animals from apes to fishes, being inoculated. The utmost that has been accomplished so far is the production at the site of the inoculation of a local new growth whose anatomical structure is exactly analogous to a leprous tubercle, and which contained in abundance the specific bacilli. Again, cases are related, like that of a man in New Brunswick, who lost three wives in succession from leprosy, yet escaped the disease himself. But these negative results have little weight as against the mass of evidence on the positive side ; and we must admit the undoubted inoculability of lepra, under favorable circumstances, upon the human subject.

Lepra has long been regarded as an indubitably hereditary disease ; but lately grave doubts as to its transmissibility in this way have arisen. That a contagious disease of this nature should prevail in families is not surprising ; in fact it would be astonishing if children who spend their lives in daily contact with lepers, and usually lepers only, should not contract the disease. The phenomena of the disease very rarely appear in these children until they are three to five years, and often not till they are fifteen or twenty years, old. Again, children have been born in the lazaretto of leprous mothers, have grown up within its walls, and have still remained healthy. Hillis, one of the chief English authorities, still maintains the possibility of hereditary transmission, but most of the late writers, like Neisser, deny it altogether, regarding the leprosy of children of

leprous parents as the results of the almost certain inoculation for which so many channels stand open during the early years of life. It is possible that, as in the case of tuberculosis, there may be inherited a predisposition to receive the disease.

Direct proof that the bacilli found in the leprous infiltrations are the etiological factors in the production of the disease, is as yet wanting; but there is such a strong probability of that being the case, the proofs to that effect accumulating every day, that I have not hesitated to define lepra as a parasitic disease. Experiments made with intent to reproduce the disease by inoculation of animals with the bacilli and their spores have, it is true, so far failed; but the general evidence in favor of the theory is such that we can confidently hope for experimental proof of its correctness in the near future. Nevertheless, it is well to remember that Köbner, a most ardent advocate of the bacillar etiology, only claims for it a very strong probability.

In view of these facts, we may say, in conclusion, that lepra is a disease that may possibly be contagious, but is certainly inoculable; that its mode of spreading is probably by inoculation, and inoculation alone, though heredity may exercise a predisposing influence; that the infective material consists almost certainly of a specific micro-organism—the bacillus lepra, and its spores; that the bacillus, or more probably its spores, obtain access to the lymphatics by some lesion of the upper epithelial layers, when, after lying quiescent for a variable time, they multiply, wander into different parts of the organism, and cause the varied symptoms of the disease.

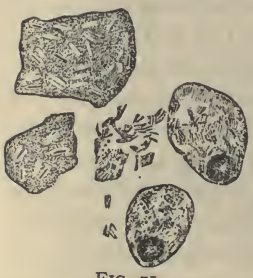


FIG. 71.

In figure 71 are represented lepra cells containing bacilli, and isolated bacilli with spore formation. The drawing is copied from Neisser's article in Ziemmen's Handbuch der Haut-Krankheiten.

Diagnosis.—In spite of the polymorphous character of the disease, its diagnosis in the fully developed form presents few

difficulties. In regions where it has its home, the prodromata might attract attention ; thus, in Japan, the deep flushing of the face, which is apparent in the very earliest stages after indulgence in alcoholics is sufficient to brand the leper and drive him at once into exile. But with us—where the disease is of extreme rarity—the general symptoms of malaise would necessarily be ascribed to some other, perhaps trivial, cause.

Perhaps with no disease is there greater danger of confounding the macular and tubercular phases of lepra, than with syphilis. The two affections stand at opposite poles as regards frequency of occurrence, and, whilst syphilis would hardly be mistaken for leprosy—a limited macular or tubercular lepra might be treated as a syphiloderm. But in the rarer disease, the color and situation of the tubercles—the co-existence of macular and anæsthetic patches—the occurrence of large persistent infiltrated areas—the atrophies of skin and muscle, and the distortion of the extremities—the history and extreme chronicity of the disease—the failure of the specific treatment, and, finally, the presence of the characteristic bacilli, would certainly suffice for the diagnosis.

In any case, great stress must necessarily be laid upon the history. If the patient was born, or has lived, in a place where lepra is endemic, the diagnosis of the disease acquires great probability from that fact alone ; while, on the other hand, it is almost without parallel in all the accorded experience of leprosy for it to develop in one who has never been exposed to these local influences.

L. maculata may be confounded with vitiligo ; but vitiligo consists simply of an absence of pigment in a localized area of the skin, with a slight increase of it at the margin of the patch. The general health remains good, no trophic changes occur, and the integument is normal in all respects, save in its color. On the other hand, the maculæ of leprosy consist of patches which feel as if firm lardaceous material were deposited in the skin ; they are paræsthetic, and the skin is changed in appearance.

Morphœa, though claimed by some writers to be a circumscribed benign remnant of the ancient epidemic leprosy, is conceded to be an affection of an entirely different nature. Its patches are normal in sensibility ; there are no other symptoms ; and the disease tends towards spontaneous recovery.

It would seem hardly possible to mistake the tubercles of leprosy upon the face for acne rosacea, or lupus, or pigmentary sarcoma. The diseases have but the most superficial resemblance to one another.

Finally, in any case, examination of the blood from suspected lesions would confirm or nullify the diagnosis.

Prognosis is always most unfavorable. The disease once established, it keeps up its regular and progressive march, broken only, perhaps, by periods of apparent quietness. Individual tubercles, or anæsthetic spots may disappear, or one form of the disease give place to another ; but leprosy is not cured by us. Lepers die, after a longer or shorter time, of the specific marasmus, of complications, or of intercurrent diseases.

The immediate prognosis depends, of course, upon the age of the disease, and upon its type. Patients in the early stages of anæsthetic leprosy usually survive many years, perhaps at least eight or ten, upon an average. In the tubercular and ulcerative stage the downward progress is more rapid, and some forms, with well-marked fever, etc., may terminate fatally in a few months. Erysipelas, pyæmia, pneumonia, etc., modify the immediate prognosis according to their own gravity and the patient's condition.

According to Hillis, the ultimate causes of death may be classified as follows :

Bright's disease,	22.5 %
Lung diseases,	17 %
Diarrhœa,	10 %
Anæmia,	5 %
Remittent fever,	5 %
Peritonitis,	2.5 %

Direct consequences of lepra; exhaustion from leprous ulcerations; leprous stenosis of larynx; lepra of internal organs, marasmus, atrophy, etc.	38 %
	100 %

Treatment.—The therapy of leprosy is undoubtedly the most unsatisfactory part of its history. No specific treatment can be recommended; of the multitude of curative measures which have from time to time been advanced, not one but has failed to fulfill its early promise. To all intents and purposes, lepra is to-day an absolutely incurable disease.

The ordinary measures of general hygiene must be insisted on. The patient must leave the place where he contracted the disease, and live in a locality were lepra is not endemic. Every possible means must be employed to sustain his general health, diet, exercise, mountain air, sea bathing, etc. Quinine in full doses, cod-liver oil, arsenic, iodine, etc., may be employed. Local sedatives must be used for the hyperæsthesiæ, and the galvanic current for the anæsthesiæ. Local symptoms, tubercles, ulcers, etc., must be treated on general surgical principles, and sulphur baths, iodine, blisters, mercurials, may be used to promote absorption of the infiltration. By means of these general measures, and in young individuals with whom the disease is not too far advanced, good may be done and life prolonged.

Among the multitude of different specifics used in different countries for the treatment of the disease itself, there are but few that need detain us. Creosote in half-drop doses, given in pill form t. d., has been highly lauded by Langherans and Perez; as also has salycilate of soda (3 ss.—3 i. d. die) by Daniellsen and Köbner. Hoàng-nàn, the powdered bark of the strychnos gaultheriana, a Chinese remedy, given in three grain pills, once to thrice a day, has not proved much more useful in the experience of others, than it did in the one case in which I observed its effects. The drug contains strychnia and brucia—but may be continued indefinitely in moderate

doses. Gurjun oil has been lately very favorably reported on by Hillis and Espinet, it being even claimed that in some cases so great an amelioration of the symptoms of leprosy has been effected by its continued use, that patients were enabled to return to their families. In British Guiana, a large number of cases were treated by it, and Hillis regards the drug as a most useful one in all forms of leprosy, retarding the disease, and in some instances apparently curing it. Gurjun oil is also to be used externally, as an ointment, or in emulsion with lime-water, one to three.

The best promise, however, is held out by chaulmoogra oil (ol. guiocardiæ, from guiocardia adorata). Many of the East and West Indian surgeons have spoken very favorably of it ; it has been used here by Sturgis, with benefit. I have seen it persistently employed, both internally and externally, with hardly any positive result. It is to be exhibited internally in gradually increasing doses, from five minims upward, in milk or emulsion ; externally it may be used as an ointment, twenty grains to the ounce.

These five drugs, then, are those which to-day represent what little promise direct therapy offers in the treatment of lepra. Neisser, Kaposi, etc., simply content themselves with stating the absolute inutility of any of them.

We possess a somewhat greater power in the direction of prophylactic treatment. The first measure is to insure the absolute segregation of leprous patients. This is fully recognized in leprous districts, but not carried out with the cases which appear elsewhere. In the second place, we must endeavor to secure the disinfection of all secretions, etc., by which the disease may be conveyed. Especially must we do this with the discharges from the leprous ulcerations, which have been found to contain the infective bacilli and their spores in abundance. By the use of chrysarobin, we may endeavor to secure the absorption of tubercles before they break down ; and by various antiseptic appliances try to destroy the virus where ulceration has occurred.

Strict measures should be employed to prevent all chances

of immediate contagion. And in the last plan may be mentioned the careful disposal of the remains of dead lepers.

SARCOMA.

Sarcoma upon the skin occurs mostly in consequence of metastasis from the lymphatic glands, though it may manifest itself primarily upon the epidermis. In its commonest form it appears as *melanotic sarcoma*, a form of malignant tumor not very uncommonly met with upon the skin. The growths are usually multiple, and are often quite small in size, especially at the beginning. They consist first of discrete, rounded, pea or bean-sized papules or tubercles of a bluish-black, graphite-like, or a brownish, or an iron-gray color. They gradually increase in size, and tend to coalesce ; then they form variously shaped, irregular, flattened or prominent masses. Later they grow into mushroom-like forms, and soon ulcerate. The nodules begin most often upon the back of the hands and feet, or on the fingers and toes, and on the genitals. The disease is usually primary upon the skin, which organ, together with the eye, forms its seat of election. It often begins in a pigmentary mole or nævus. The internal organs soon become involved ; they become studded with nodules, composed like those of the skin, of dense masses of pigmented cells. Like all the sarcomata, the disease runs a rapid and malignant course.

Two other forms of sarcoma cutis may be briefly mentioned here. One is the "idiopathic multiple melanotic sarcoma," of which cases have been described by Wigglesworth, Kaposi, etc. They appear upon either surface of the hands and feet, as reddish or bluish, round, fairly hard tubercles, at first discrete, but later fusing into larger irregular masses. They gradually extend up the extremities to the trunk and face. The skin of the affected parts is thickened by the irregular infiltrations ; it is stiffened, and is painful both on touch and spontaneously. Ulceration rarely occurs ; after the individual masses have lasted for a varying number of months they undergo atrophic changes, leaving darkly pigmented and

depressed scars. After several years the face becomes affected, the bluish-red, sponge-like masses appearing in varying situations. Then diarrhœa, fever and marasmus soon lead to a lethal termination. Post mortem, all the internal organs are found infiltrated to a greater or less extent with the characteristic nodules.

Another form of sarcoma of the skin has been described by Duhring, Geber and others, under the title of "inflammatory fungoid neoplasm of the skin." There appears upon various portions of the body red, flat or prominent papules and tubercles, gradually growing and coalescing until in a few weeks they form larger irregular masses. Atrophic changes, with depressed and pigmented scars were seen in some instances; in others, large, irregular fungoid masses with a pultaceous blackish-red, easily bleeding surface were noticed. Death occurred in all cases from general marasmus within three years of the inception of the disease. Exact pathological data concerning the affection is as yet wanting, but it is undoubtedly a form of malignant sarcoma cutis.

Diagnosis.—Sarcoma of the skin may be confounded with a tubercular syphilide, with lupus, and with lepra. It is needless to recapitulate the points of distinction which characterize these affections.

Prognosis.—The prognosis is very unfavorable. Neither extirpation of the sarcomata when they first appear, nor internal medication, has any effect. As a usual thing the disease lasts several years before a fatal termination is reached.

Treatment is necessarily confined to mitigating the patient's sufferings. For the disease itself we can do nothing, unless arsenic should prove to be of benefit as maintained by some.

CARCINOMA.

Several varieties of carcinoma occasionally affect the general integument. By far the most common is the epithelial carcinoma; and next to this, but occurring far less frequently, is scirrhus cancer The so-called carcinoma melanodes is more

properly classified under the sarcomata ; but in its clinical features it is closely connected with the scirrhus cancer.

Reserving for the present the consideration of epithelioma, we find that carcinoma, where it does affect the skin, is of the scirrhus variety. Sometimes it occurs primarily in that situation ; more usually it is secondary to a like affection of the female breast or of some part of the alimentary canal. It occurs either in the lenticular or in the tuberous form.

Carcinoma lenticulare is almost always a secondary affection, and is most commonly seen on the skin covering the breast affected with the same disease. It is a form in which the malady is very likely to occur after extirpation of the breast. It appears as various-sized, hard, smooth, and glistening nodules or tubercles, flat or raised, and of a dull brownish or pinkish color. There are usually a number of these spread over the surface of the skin ; at first discrete, they soon coalesce and form larger tubercular masses, and then the whole integument is irregularly indurated and thickened, and its surface smooth and glistening. Extensive cases, in which the new growth infiltrates and involves large tracts of tissue on the front and side of the thorax, form the " cancer en cuirasse " of Velpeau. Sooner or later the vascular supply is interfered with by the abundant new connective-tissue development ; softening and ulceration occur, and marasmus and death end the process. The pain accompanying the disease is generally considerable.

Carcinoma tuberosum is more rarely seen. It may be a primary or a secondary manifestation, and usually occurs in individuals of moderately advanced age. It appears as circumscribed, flat or elevated, rounded nodules or tubercles deeply seated in the skin, and varying in size from a pea to a small egg. Their color is usually a dull brown or violaceous hue. They are disseminated over the entire surface, and usually remain discrete during their entire course. Eventually, as in the lenticular form, and from the same causes, they break down, ulcerate, and end fatally.

As regards their anatomical structure, both varieties consist of a variable amount of connective tissue stroma grouped into

alveoli, the meshes of which are crowded with cells of an epithelial type, without any intercellular substance. The retrogressive changes occur from the excessive development of the fibrous stroma, causing obstruction and obliteration of the vascular supply, and degeneration and death of the cellular elements.

Diagnosis.—The carcinomatous forms can hardly be confounded with any other affection. Papular syphilis, tubercular or papular lupus, and lepra may possibly present difficulties in the diagnosis.

Prognosis.—Is unfavorable. The carcinomata usually take a little longer to reach a fatal termination than do the sarcomata, but neither local extirpation or internal treatment seem to have any effect upon the course of the malady.

Treatment.—Little need be said under this heading. The carcinomata of the skin are usually secondary, and local removal is followed only by a return and an increased rapidity in the course of the malady. The local lesions and the general health of the patient must be treated *secundum artem* to the best of our power.

EPITHELIOMA.

Epithelioma of the skin is an affection of sufficiently common occurrence to merit some considerable attention on our part. We recognize at least three different forms of the affection, which we shall describe separately, leaving till later the more general considerations concerning their etiology, prognosis and treatment. They are the superficial, the deep-seated, and the papillary varieties of epithelioma.

1. *Superficial epithelioma* begins as one or more neighboring pale-red or yellowish-white and waxy hard nodules. Their surface is shining, and they are usually aggregated into irregular, wart-like masses. They early show a disposition to fissure and excoriate, and become covered with thin, dark crusts, on the removal of which a surface secreting a scanty viscid fluid is left. In fact, in this early stage, the epithelioma looks exactly like a

wart the surface of which has been irritated by scratching. It very slowly spreads peripherically, taking years perhaps to attain the size of a bean. As the nodule becomes older and larger, however, it commences to grow more rapidly. New deposits appear immediately about the circumference of the primary area, and sooner or later the whole mass breaks down into a superficial ulcer. As a usual thing the disease is not brought under our notice until ulceration has occurred ; but the primary nodules are always quite characteristic and enable us to recognize the malady long before the patient becomes concerned about it. They appear as small, shining, white, mother-of-pearl-like bodies, so superficial as to be easily dug out of the skin. In fact they look very like milium corpuscles. Under the microscope, the little tumor is readily seen to be composed of a closely-packed mass of epitheloid cells of varying form and shape. These little bodies have long been known as cancroid corpuscles.

The ulcer eventually formed slowly increases in size, until it may attain the dimensions of a large coin or more. It is rounded or irregular in shape ; its edges are sloping, raised, transparent and indurated ; its base is reddish and uneven, and bleeds easily ; a scanty, viscid, yellowish secretion exudes from its surface. As a general thing, when it has attained a certain size, it begins to involve the deeper tissues, and merges insensibly into the form of the disease next to be described ; but it may remain for years in an almost stationary condition, the patient enjoying the best of health.

The disease long designated as rodent ulcer by the English surgeons, is simply a form of this variety of epithelioma. It consists, as usually seen, of a rounded, sharply circumscribed superficial ulceration, with brownish or yellowish-red irregular and granular base, and secreting a viscid fluid. Its edges are prominent and well defined ; and a varying number of the peculiar cancroid corpuscles are visible upon its surface. It spreads very slowly indeed, and involves every tissue with which it comes in contact, even bone. Rodent ulcer is most frequently seen upon the upper part of the face, on the eyelids, nose, etc

The further course of the superficial epithelioma is a varying one. Cicatrization of the central portions of the ulcer is often seen in old standing cases, even to such an extent as to reduce the area of ulceration to a narrow rim around the borders of the scar. In some cases the outlying nodules are absorbed, and the disease, in the course of many years, undergoes spontaneous cure. But as a rule the affection persists until the patient dies of some intercurrent affection.

Warts, especially those called verrucæ senilis, are very liable to form the starting point of this variety of epithelioma. The general health usually remains good throughout the entire course of the disease; nor are the neighboring lymphatic glands ever involved.

2. *Deep-seated epithelioma* commences in the form of rounded or conical tubercles, varying in size from a split-pea to a bean. Usually a number of them are found closely packed together in a limited area of skin. The nodules are very deep-seated, reaching down into and intimately united to the subcutaneous connective tissue; they are hard to the touch, and semi-transparent, though slightly reddish or purplish in color. Usually the entire growth is elevated; but it may take the form of a diffuse, flat infiltration not rising above the level of the skin. In the course of months or years, the closely aggregated mass of nodules has grown perhaps to the size of a nut, and forms a prominent, rounded, hard tumor, whose shining, waxy surface is covered with finely-branched bloodvessels. Very often a spontaneous atrophy of the centre of the tumor gives it an umbilicated appearance. The margins of the growth are steep, and often exhibit the above mentioned cancroid corpuscles. At length, as in the case of the superficial variety, isolated nodules, resembling in all essential characteristics the primary mass, appear in its neighborhood. Sooner or later ulceration occurs, and there arises a deep, rounded or irregular excavation, with steep, puffed out, everted, purplish edges, from which, by pressure, the peculiar cheesy, comedo-like plugs, the cancroid corpuscles, may be expressed. The ulcer secretes a yellowish, viscid fluid, and bleeds readily when touched. The

cancerous infiltration spreads with a varying degree of rapidity and the ulceration progresses correspondingly. The deep tissue, cartilage, muscles and bones may be involved. Pain, which is present throughout the disease, becomes very marked in the later stages. The lymphatic glands are involved, and the patient eventually dies of exhaustion. Though the affection is usually a very slow one, it occasionally runs its entire course in a year or two.

3. *Papillary epithelioma* or malignant papilloma, is the most rapidly fatal form of epithelial cancer. It is usually seen during the course of either one of the other varieties, though it may occur as a wart-like growth from the beginning. Generally it appears as a raspberry-like mass elevated several centimetres above the surface of the integument, and varying in size from that of a split pea to that of a nut. In other cases they form larger, lobulated and spongy masses. Their surface may be covered by a thin layer of dried, yellowish epidermis; or it may be macerated and moist; it is often bathed in a viscid, bloody secretion. As the granulations become more and more abundant, fissures and excoriations occur, an offensive fluid is poured out, and brownish crusts and scales cover part of the growth. Finally, the whole papillomatous mass breaks down, and an ulcer, exactly as in one of the two previously described forms of the disease, is left. If the cutis under a malignant papilloma is only slightly infiltrated, the resulting ulcer runs the course of the superficial variety of epithelioma; if the infiltration has spread deeply down, it runs the quicker course of the more malignant variety.

Epithelioma is especially prone to occur upon the face, being most common upon the eyelids and in their vicinity, and upon the nose—and less frequently upon the lips, cheeks and forehead. From the lids the disease may spread to the conjunctiva. Upon the forehead the deep seated variety is most common. A very favorite location is upon the sides of the bridge of the nose, near the inner canthus. Upon the tip and alæ of the nose it frequently affects the cartilages and the bony structures, vomer, superior maxilla, etc. Upon the lips

the deep variety is most common, the lower lip being one of the favorite seats of the disease; it often spreads thence on to the mucous membrane of the mouth and the tongue. In some cases most extensive destruction of tissue has been noticed, the antrum of Highmore and the frontal cells opened, the skull perforated, and the brain exposed, etc.; but the large majority of the epitheliomata found about the face are of the superficial variety.

The genitals, the penis and scrotum of the male, and the labia of the female, are quite common seats of epithelial cancer. Upon the glans penis it is very liable to assume the papillomatous form and to resemble somewhat closely the ordinary venereal wart. The superficial variety upon the prepuce forms the well known chimney-sweepers' cancer. On the female genitals the affection is rarer, but either the superficial or the deep form may occur. The nipple, navel, etc., may be affected, as may also be any indifferent portion of the skin.

The nasal and buccal mucous membranes, the conjunctiva, and the lining of the vagina and rectum may be the seat of the disease, either primarily or as spreading from the neighboring skin. They are usually considered in connection with epithelioma of the integument. Epithelial cancer of the vagina, often of the papillary form, and more rarely epithelioma of the tongue and buccal mucous membrane, is sometimes to be diagnosticated from the initial lesion of syphilis. In all these situations the characters of the affection are essentially the same as those presented by it when it occurs upon the skin.

Anatomy.—Epithelioma consists in the downward growth and continuous proliferation of epithelial cells from the rete. As the cutaneous surface is composed of stratified pavement epithelium, so the form of epithelioma met with is always of the pavement variety. In the earliest stage of the process a vertical section of the skin shows only an increase in the size of the interpapillary processes of the rete, a growth extending further downward into the corium. In this early stage its nature cannot be distinguished from the changes occurring in some other diseases, as, for instance, psoriasis.

FIG. 72.—Section from an epithelioma of the nose. *a*, corneous layer; *b*, rete; *c*, papillæ of corium; *d*, growth downward of the rete processes; *e*, inflammatory infiltrated corium.

As the process, however, continues and the epithelial collections extend deeper into the corium, changes characteristic of epithelioma occur. From the great number of new cells present, they become pressed against each other and tend to form compact masses. The cells of the central portion of these collections undergo the horny transformation, and then we have the characteristic cell collections of epithelioma, the so-

called cell-nests or globes, consisting in the centre of horny transformed cells, and externally of laminæ of flattened epithelium. These horny, transformed and flattened cell collections are not present in every case of epithelioma, nor is their presence always necessary for a diagnosis. The proliferatory epithelium may extend in the form of conical or tubular collections in which the horny transformation does not occur.

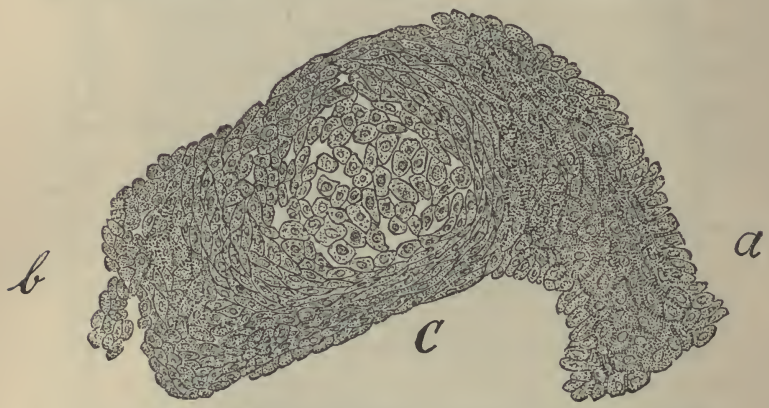


FIG. 73.—A section of an epithelioma showing the arrangement of the cells in the so-called cell-nests. *a*, portion nearest the surface of the skin; *b*, deep portion of the epidermic mass; *c*, cell nest forming.

This rapid proliferation and new formation of tissue cannot occur without an increased supply of nutriment being brought to the part, consequently the bloodvessels are always found enlarged. As the new growth extends, it also sets up an irritation and consequent inflammation in the surrounding tissue, so that the latter is infiltrated with serum and round cells and its bloodvessels dilated and otherwise changed, as is seen in fig. 72. Finally, the central portion of the mass can no longer be supplied with the proper amount of nutritive material and consequently degenerates, breaks down, and ulceration occurs. As this breaking down only occurs in parts removed from the bloodvessel supply, so at the margin of every epitheliomatous ulcer there is still present an area of active epithelial formation.

Secondary tumors in epithelioma form in the lymphatic

glands first, as the lymph vessels are in closer connection than bloodvessels to the primary tumor.

In epithelioma death occurs from the ulceration and its consequences, as septicæmia, etc., or by attacking some vital organ either directly or indirectly.

Some observers have maintained that the new cells in epithelioma may come from endothelial cells, from connective tissue corpuscles, or from embryonic cells of whatever origin. As it has never been proven that the epidermis is regenerated in any other way than by the epithelial cells of the rete mucosum, so no one has ever yet satisfactorily shown that the epithelial cells in epithelioma come from other than pre-existing epithelium.

The flat epithelioma, then, may be considered to come from the general rete, the nodular or deep-seated form from the interpapillary portions of the rete especially, and the papillary or cauliform form to arise from a combination of epitheliomatous formation, and papillary hypertrophy the result of nutrition changes in the papillary connective tissue from irritation by the tumor cells.

Etiology.—We are still in the dark as regards the etiology of all the carcinomatous diseases. As regards epithelioma proper, whilst we do not know its original cause, we recognize certain conditions or anomalies of the integument which strongly predispose to its development. In many cases an hereditary influence can be early traced. I know of cases of epithelioma occurring in three successive generations. Advanced age seems to be an important factor, for the large majority of epitheliomas occur in patients over forty years of age. Occasionally it is seen in younger persons, and sometimes even in children ; but these instances are exceptional, and are looked upon by Bohn as cases in which the tissue of the skin prematurely assumes the characteristics proper to integument of elderly persons.

It is a well-recognized fact that certain pathological conditions, depending upon altered nutritive relations between the different elements of the skin, often prove the starting point of an epitheliomatous degeneration. Thus the senile changes of

the integument, xeroderma, lupus, many of the keratoses, warts especially of the pigmentary variety, condylomata, cutaneous horns, etc., are favorite points of development for the malady. Direct mechanical or chemical irritation often causes the affection. Thus the irritation set up by the use of a pipe is a well-known cause of epithelioma of the lip, which often starts from some long irritated fissure. The affection, in general, is far commoner among men than among women, from what cause we are unable to say.

Diagnosis.—The diagnosis of epithelioma is generally easy, but sometimes presents considerable difficulties. Beginning, as it often does, as a simple wart, it is sometimes almost impossible to decide whether the affection is cancerous or not. The age of the patient and the rapidity with which the tumor has developed will aid us; but it is often necessary to withhold a diagnosis until the affection has been under observation for some little time. Besides this, the non-ulcerated epithelioma, especially when it occurs about the genitals, requires to be diagnosed from the initial lesion of syphilis, and here, again, the age of the patient and the nature of the base and margin are the points upon which we must rely.

The epitheliomatous ulcer is to be differentiated from tertiary syphilis, and from lupus vulgaris. As regards the specific disease, the points of distinction are as follows: Syphilitic ulcers run a far more rapid course than do epitheliomatous ones; several points of ulceration, not one alone, as in cancer, usually exist; the secretion is abundant, foul, and creamy; in epithelioma, viscid, stringy, and bloodstreaked; the surrounding induration is small in amount, while in cancer it is widespread and hard, and the edges waxy in appearance; finally, there is but little pain in syphilis, while it is a marked feature in the deeper varieties of epithelioma. The differences between lupus and epithelioma are many. Lupus usually starts in childhood; epithelioma in middle-life or old age. Lupus is multiple, and often invades wide areas; epithelioma starts from a single spot, and never attains any thing like the extent of the former disease. In lupus, almost always, the peculiar papules

will be found around the periphery of the patch, or in the scar tissue. Besides this, the lupus ulcer has an abundant, yellow, puriform discharge, the cancerous one a pale, scanty, viscid secretion. The two diseases are sometimes found together.

The papillary form of epithelioma is sometimes in its earliest stages very difficult to distinguish from an ordinary condyloma. The age of the patient may help us to some extent, but it is often impossible to decide positively as to the nature of the growth. It is advisable in that case to treat it as a case of the less serious affection, reserving more radical measures till later. When the skin in the neighborhood of the papillary growth begins to get hard and infiltrated, and when fissures and suppurating points begin to appear upon its surface, all doubts as to the diagnosis are at an end.

It seems hardly necessary to speak of the diagnosis between a localized eczema of the nipple and a commencing epithelioma ; the presence of itching, and the immediate good result of simple treatment, soon show the absence of the more dangerous malady.

Prognosis.—This varies considerably in different cases. The more superficial forms may run on for many years without giving rise to any serious trouble ; or they may sooner or later be transformed into the deeper-seated kinds. The length of time the disease persists is also very variable. The deeper epitheliomata are more rapid in their course than are the rodent ulcers, etc.; they usually last several years, though cases are on record in which they have caused a fatal termination in one or two years. Recurrences are very common in either form. In general, the patient's age and the locality, type and course of the disease will determine the immediate prognosis.

Treatment.—The treatment must be entirely local ; internal remedies have no effect upon the course of the disease. The local new growth must be removed either by chemical or mechanical means. Dermatologists generally have preferred one of the caustics, while surgeons have been accustomed to rely upon the knife. Both methods of treatment have their value ; the caustics being better for the superficial varieties, whilst operative procedures

are more appropriate for the more deeply-seated kinds. As regards caustics, in a general way, the same preparations may be employed as were recommended for lupus vulgaris. Caustic potash, in stick form, or as a strong solution, has long been used ; it should be thoroughly applied, even into the borders of the sound tissues. Neutralization by dilute acetic acid immediately afterward relieves the pain, which is not very intense. The sound parts may be distinguished by the greater resistance they offer to the caustic stick. A dressing of simple ointment or olive oil may follow the operation ; it should be renewed twice daily, and the wound washed with soap and water. In a fortnight the eschar will have separated, and a healthy granulating surface is usually left.

Arsenic, in the form of Marsden's paste, is very useful. This consists of equal parts of arsenious acid and powdered gum acacia, with just enough water to form a fairly soft paste. It should be thickly applied, and then confined to the part by a good piece of rubber plaster. It may be left on for twelve to twenty-four hours, as long as the patient can stand the pain, which is quite severe ; after using some soothing ointment, or linseed poultices, for a few days until the slough has separated, it should be applied again if necessary. Two cauterizations are generally sufficient. A poultice should then be re-applied to loosen the slough, after which the wound may be dressed with diachylon or zinc ointment. A small amount of sulphate of morphia may be added to the paste to mitigate the pain. Healthy tissue is entirely unaffected by the application. The use of Marsden's paste forms one of the best possible means of treating both the more superficial and the papillomatous varieties of epithelioma. It must not be applied over an area larger than two to three square inches at one time, and should not be used on mucous surfaces. Pyrogallic acid is strongly recommended by many of the German authorities. It is to be used as an ointment, 1 to 4, 6, or 8, and kept constantly applied to the part for a week or more. It is not painful and is very highly spoken of by Jaricsh and others. The oleate of arsenic I have not found to be of any benefit.

The chloride of zinc, either solid, as stick or powder; or made into a paste, with flour, is also a favorite application. It is, however, intensely painful and though quite effective, is hardly to be recommended.

In the very superficial forms, the stick of lunar caustic may be employed in the manner described in the treatment of lupus vulgaris. For the very superficial cancers, I prefer the nitric acid application, as its action is certain and the pain produced is not great.

Whatever caustic be chosen, its extent of efficacy is soon apparent. If the entire epitheliomatous mass has been destroyed, the wound will heal entirely; but if in any corner of it cancerous tissue be left, that portion will not heal, will commence to break down afresh, and will soon show the characteristic edges of an epitheliomatous ulcer.

If the disease is very extensive, or if caustics previously applied have failed to arrest its course, it becomes necessary to use the knife. On certain situations, as upon the lip, this forms our best means of treating the disease, if the tumor has attained any considerable extent. Simple excision, or excision followed by the replacement of the lesion by a flap of sound skin, taken preferably from some distant part, may be tried. For details, the reader is referred to the text-books on operative surgery. The galvano-cautery has been successfully employed. The use of the dermal curette, followed by a caustic application, is a very favorite method in Vienna, and is very successful, especially in the more superficial forms of the malady. New nodules appearing after the operation must be immediately destroyed by one of the means before mentioned.

KELOID.

Syn.—Cheloid, keloid (true and false, cicatricial and spontaneous); cheloid of Addison, of Alibert, etc.

Definition.—Keloid is a circumscribed connective-tissue new growth of the skin, characterized by the appearance

therein of one or more irregular, elevated, firm, smooth, reddish and somewhat elastic cicatriform tumors.

Etiology.—We know but little concerning the cause of keloid. The false or cicatricial variety arises always in places where there has already been some new growth of connective tissue, as in the scar from a cut or burn, or even in the minute cicatrix left by a leech-bite, or an acne or variola pustule. Most frequently it occurs in the hypertrophic scar left by a burn or scald; it is often seen in the lobe of the ears where they have been pierced. Some individuals are especially prone to it, the very smallest lesions causing a new growth of connective tissue. Negroes seem to possess a special predisposition for the disease, most of the cases we see here being in persons of that race.

As regards the true, spontaneous keloid, we are quite in the dark concerning its etiology. Here, too, we know that some families, and some races (notably the negro), are specially liable to it, but we know nothing as to the real cause of the tumors.

Both forms occur in adult life; they have not been observed in infancy. They are said to be more common in women than in men (Follin).

Keloid shows a special disposition to appear on certain parts of the body, notably upon the sternum.

Symptoms.—The term keloid is one that has been rather loosely used; it has been applied to various lesions, and much confusion has thereby arisen. The original keloid, which Alibert first described in 1830, was an hypertrophy of the connective tissue of a scar, though he seems to have included under the term certain growths which were malignant, and which we now know are of an entirely different nature. Twenty-four years later, Dr. Addison first made the distinction between this keloid disease of Alibert and another analogous affection which he called "true keloid," and which has since been known as Addison's keloid. This latter is a much more important and extensive affection, and does not depend upon the presence of a previous new

growth of connective tissue for its development; to it the term "keloid" simply should be restricted. Thus we have the true, or spontaneous, or Addison's keloid, and the false, or cicatricial, or Alibert's keloid. Nevertheless, the two diseases depend upon essentially the same pathological process; in the one case appearing widespread through the body, and without definite cause, and in the other case limited usually to one spot, and that spot one where connective tissue new growth has already occurred—a scar.

Still another form must be included under the general designation of keloid, since it stands between the two other varieties, touching on the one hand the cicatricial, and on the other hand the spontaneous keloid, viz. the hypertrophic scar. Under the head of anatomy, I shall refer to this relationship again.

It is very certain that some, at least, of the growths described by Alibert, Addison, Retz, and others, under the name of keloid, were not the benign new growth which we are considering at all, but were examples of true sarcoma. Alibert defined keloid simply as a cicatrix-like tumor of the skin; a sarcoma may start from a scar, or from a true or a false keloid. Hence the malignant course and the fatal termination of some of the growths described under that name.

Still further confusion was introduced into the nomenclature of this disease by the fact that at least two other affections, now looked upon as distinct, were included by the older authors under cheloid. They are scleroderma and morphœa. The reader is referred to the appropriate headings for their further consideration.

True keloid begins as a small, pale, pea-sized nodule situated in the skin. It may be single, but often becomes multiple in time. It very slowly increases in size, and eventually, after years, becomes stationary and ceases to grow. As we usually see it, it has existed for some time, and appears as a sharply circumscribed, hard and elastic tumor, elevated three to four mm. above the general integument. Its color is pink or reddish, or again it may be white. Its surface

is smooth and shining. It is usually elongated, or circular in form, but it is especially likely to bear a more or less marked resemblance to a crab, the central part of the tumor forming the body, and the long processes extending in various directions into healthy skin, resembling the legs. It may vary in size from that of a small pea to an area of several square inches. The surface of the tumor is smooth, the epidermis covering it is thin and elastic ; few, if any, hairs or sebaceous glands are present, though sweat glands in abundance have been found in some of them. Along the margins of the tumor a slight puckering of the healthy skin marks the line of advancement of the disease. The tumor is moderately elastic to the touch, and may be tender on pressure.

In by far the greater number of cases we find the disease upon the frunk and especially, as before stated, upon the sternum, whence it spreads laterally, sending out prolongations along the ribs. It occurs, however, on other parts of the body, as on the mammæ, the ears, the arms, and the genitals. There may possibly be slight, spontaneous pain, or itching, especially when warm in bed, or during hot weather.

Once formed, keloid usually lasts for life. It becomes stationary after a certain time, and does not tend to undergo any further change. A very few cases have been reported in which complete involution occurred. It never ulcerates, or exhibits malignancy. As I have stated elsewhere, those cases in which a malign course was observed were cases of sarcoma, not of keloid.

Usually single in number, keloid may be multiple, a considerable number of tumors of varying size and shape being situated on different parts of the body.

The false or cicatricial keloid is almost exactly similar to the true one in appearance, but it is usually single. It is especially apt to occur in the scars of burns. Its course does not differ from that of the former variety.

In both forms of keloid, a marked amount of pain, either constant or paroxysmal, may be present.

One point remains to be noticed in the semiology of ke-

loid, and that is, its decided tendency to recur after removal. This occurs even when the knife has been carried clear into the healthy skin. It will be again adverted to in the consideration of the treatment of the disease.

The hypertrophic cicatrix is exactly like a false keloid, but differs from it in being limited in size to the area of the original scar tissue. Its history is that of cicatricial keloid. Certain peculiarities in its structure are touched upon under the head of anatomy.

Anatomy.—The new growth of connective tissue is usually sharply limited, and is situated in the corium. The fibres are united into dense bands, and the bands generally run parallel to the surface of the tumor.

Warren, Rokitansky and Virchow have studied the pathology of the spontaneous, and Kaposi that of the cicatricial keloid. According to this latter there are three distinct forms to be considered, namely: 1. True keloid; 2. The hypertrophic scar; 3. The cicatricial keloid.

1. In keloid proper, the tumor is composed of bundles of whitish connective tissue in the corium, and disposed parallel to the skin. But few spindle-cells or nuclei are to be seen, for the growth consists almost entirely of fibres. At first there are a considerable number of vessels; but these seem to become compromised as the tissue contracts, and in the older parts of the tumor the vascular supply is very limited. The papillæ are intact, and herein lies the essential histological difference between this and the succeeding keloidal forms; for the corium has not been destroyed by previous inflammation.

2. In the hypertrophic scar, on the other hand, not a single papilla is to be seen; for the ulceration, etc., that preceded the scar has destroyed them. The points of distinction between this and the third form are, first, that the new tissue never spreads beyond the limit of the original scar, and secondly, that the connective tissue fibres are not gathered into close parallel layers, but are loose, run in isolated bundles, and form an irregular network of tissue.

3. False keloid gives us a combination of the characters of

the true keloid and of the hypertrophic scar. The papillæ are gone, as in the scar, but, like true keloid, the connective tissue bundles are dense, without cell forms, and the growth is not limited to the site of the cicatrix.

Diagnosis.—Keloid in general is easily recognized from its striking appearance. It is difficult to distinguish a false keloid from a cicatricial scar. The diagnosis can be made with the microscope, but practically is often difficult to reach. The more like ordinary skin the surface of the tumor is, the more the normal papillæ and follicles are preserved the more likely is it that we are dealing with a keloid, and not with an ordinary scar. Its occurrence on the sternum, etc., also favors keloid. The situation, tubercles, color, etc., distinguish rhinoscleroma from keloid. The absence of circumscription and the wide extent of the disease serve to differentiate scleroderma from it.

Prognosis—is not very good, for spontaneous involution is rare, and we can hardly cure it. It does not itself usually interfere with the comfort or well being of the individual. It tends, after a long time, to cease to grow, and then persists until death. It is almost certain to return if removed by operative procedure.

Treatment.—It sometimes becomes necessary to attempt the treatment of these tumors on account of the deformity they occasion, but more often on account of the pain that sometimes accompanies them.

Excision is inapplicable; the tumor almost invariably returns, even though the incisions be carried wide of the tumor, through healthy skin. So long as the tumor is growing, operative procedure must not be employed. To allay the pain, morphia may be injected into the part; or chloroform liniment or belladonna ointment, or cold employed locally. Multiple scarification, as done for rosacea, is recommended by Vidal. Duhring speaks well of caustic potash, though I agree with Follin in considering the use of caustics as improper.

We may make an attempt to promote absorption of the growth by the diligent use of lead, or mercurial plasters, or

iodine, which may possibly be efficacious so long as the connective tissue is yet young. Wilson recommends that the growth be painted with a mixture of a drachm of iodide of potassium, an ounce of soft soap, and an ounce of alcohol, followed by the persistent use of lead plaster.

For the paroxysmal pains quinine and arsenic may be used.

MOLLUSCUM FIBROSUM.

Syn.—M. simplex; m. non-contagiosum ; m. pendulum; fibroma molluscum.

Definition.—The disease consists of a connective-tissue new growth of the skin, characterized by the appearance therein of sessile or adherent, rounded, painless, soft or firm tumors, varying from the size of a split pea to that of an egg, or larger.

Symptoms.—In almost all cases a considerable number of these connective tissue tumors are present upon the patient, some so small as to be barely perceptible underneath the skin, whilst others may be as large as a clinched fist, or even as a child's head. Their shape varies considerably ; some are firmly seated in the subcutaneous connective tissue by means of a broad base, whilst others are connected with the deeper parts by their peduncles, and hang down into a bag of loose skin. The integument covering them is usually normal, though somewhat pale ; over the larger ones it may be tightly stretched, bluish-red in color, and showing many dilated vessels. They vary in the impression conveyed to the touch ; some of them feel quite soft, as if the sacs were partly empty, or filled with some gelatinous material ; others again are harder and more fibrous.

The tumors are almost always multiple, and are sometimes present in very large numbers. Hundreds may be perceptible in various stages of development in the skin of different parts of the body ; most of them are of small size, but in some cases individual tumors may weigh many pounds. They occur all over the body, and are quite common upon the scalp and face, and on the genitals. No subjective symptoms of any kind at-

tend their growth, though of course the heavier ones and those situated upon such parts as the eyelids, penis, etc., may give rise to much annoyance. They may make their appearance upon the body at any period of life, but almost always in childhood. Once present, they usually grow, though generally very slowly, during life. Most commonly, having attained a certain size, they remain stationary ; but the larger ones may cause inflammation and gangrene of the superjacent skin from pressure. Spontaneous involution of these tumors has been known to occur.

Anatomy.—There is some difference of opinion as to the precise structure in the skin in which these tumors originate. According to most authorities, including Virchow and Kaposi,

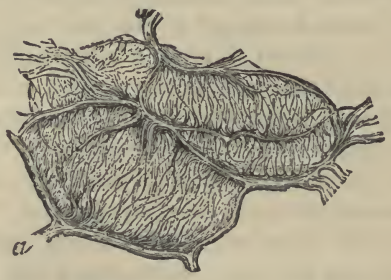


FIG. 74.—Molluscum fibrosum.—(Virchow).

they spring from the connective tissue frame work of the fatty tissue. Rokitansky maintains that they begin in the connective tissue of the corium, whilst Fagg and Hawse place their origin in the connective tissue walls of the hair-sac. The first view is probably the correct one. As they grow out, they lift up the skin, and eventually project as simple or lobulated, more or less pendent tumors. The sheath is not united to the superjacent skin, save in the middle line, where the connective tissue fibres of its capsule and of the skin blend with one another. If we cut into one of these tumors we find it composed of a white fibrous mass, inclosed in a dense connective tissue capsule. The central portion is more or less soft and pulpy, and a little yellowish fluid may be squeezed from it. The peri-

pheral portions are more firmly organized. The very young tumors are composed of gelatinous, newly-formed connective tissue; the cells are abundant, and the fibrillæ, minute and irregular. The very old growths, on the other hand, consist entirely of a dense, firmly-packed fibrous tissue. Comedones and dilated sebaceous glands are common in the skin covering the tumors.

Etiology.—The cause of the disease is entirely unknown. It is supposed to be hereditary, and in one of Virchow's cases it manifested itself in three successive generations. It sometimes attacks several members of one family. Whilst it seems itself to exercise no special deleterious effects upon the general health, it has been noticed by many that patients suffering from molluscum fibrosum, are stunted both in their mental and in their physical development.

The disease occurs with about equal frequency in both sexes, but is quite rare in this country.

Diagnosis.—The differential diagnosis from molluscum contagiosum is given at length under the heading of that disease. Suffice it to mention here that there is no visible depression or aperture upon the summits of the tumors as in m. contagiosum; and that they are situated deep in and under the skin, and do not stand forth as prominent superficial growths.

The tumors might possibly be confounded with multiple neuromata, or with lipomata; but the pain accompanying the one, and the lobulated structure and soft feel of the other, should be sufficient to obviate all error.

Prognosis.—Is not good. Involution is rare spontaneously, nor can we bring it about by remedies. The tumors run their course, increase in number and size to a certain extent, and then remain stationary. Marasmus and tuberculosis leading to a fatal termination has been noticed in some cases.

Treatment.—The tumors may be excised or ligatured, if not too numerous. Even if present in numbers, the largest and most annoying may be removed in this way. The galvanocautery has been successfully used in these cases.

XANTHOMA.

Syn.—Xanthelasma (Wilson); vitiligoidea (Addison-Gull); fibroma lipomatodes (Virchow).

Definition.—A connective tissue new growth of the integument, the mucous membranes, the subcutanea and submucosa, characterized by the formation of yellowish, circumscribed, variously sized macules or tubercles.

History.—The disease was first accurately described by Addison and Gull, in 1851, who called it vitiligoidea; for which Erasmus Wilson very properly substituted the commonly received terms of xanthoma or xanthelasma. Most of the cases seen so far have come from England, where Pavy, Fagge, and Wilson have recorded them. In Germany Hebra, Cohn, Virchow, Waldeyer, and Kaposi, have studied the pathology of the disease.

Symptoms.—Xanthoma occurs in two distinct forms, which must be separately considered, namely, as x. planum, and x. tuberosum.

Xanthoma planum, xanthelasma, consists of variously-sized, elongated plates, situated usually in the integument. They are yellowish, straw-colored, or creamy, and often look just like patches of chamois-skin "let" into the epidermis. They vary in size from a pin's head to a finger-nail, or even more. They have a sharply defined and usually oval border, but are smooth and even to the touch; and when the fold of skin containing them is taken up between the fingers, it feels perfectly natural. Their commonest site is on one or more of the eyelids, most often at the inner angle of the upper lids, then on the lower, and sometimes surrounding both lids entirely. They are often arranged symmetrically on the two halves of the face. They may also occur on other parts, on the cheeks, nose, ears, neck, extremities, and even on the lips, palate, trachea, the lining membranes of the bile ducts in the subperitoneal connective tissue, and in the abdominal muscles. In shape they are usually elongated, with semi-circular borders. There may be smaller isolated patches outside the principal formation.

Xanthoma tuberosum occurs as papules or tubercles, varying in size from a pin's head to a bean. They are whitish or yellowish, and may be isolated, or united into plaques of greater or less extent. These plaques may be striated on their surface. The papules are elevated to a variable degree, perhaps as much as 4 mm. above the level of the surrounding skin ; their consistency is very little greater than that of the rest of the integument. This form of the disease is more liable to occur upon cheeks, on the elbows and knees, fingers and toes, palms and soles ; it has been seen on the head, and on the penis and labia. It may occur in conjunction with the other form.

X. tuberosum may be slightly painful, but usually, there is no subjective sensations in either form of the disease. The tubercles, when occurring on the hands, have been known to be sensitive enough to prevent the patient handling anything.

Xanthoma occurs at all ages, but is more common during middle or advanced life. The lesions are usually single, but there is a multiple form (x. multiplex), which is sometimes seen. Here the disease usually begins as the macular variety at the inner canthus of the lids, and gradually invades palms, soles, face, ears, flexures of joints, and trunk, perhaps the mucous membranes. Sometimes we see a patch of x. planum which has become tuberous at its margins.

The malady runs a very slow course, and usually lasts through life. But some acute cases of x. planum et tuberosum are recorded by Korach and Hertzka in which it spread more or less over the whole body in a few weeks, accompanied by icterus and pruritus. The patches have been known to disappear spontaneously ; and the disease is commoner in women than in men.

Anatomy. — Xanthoma is a connective tissue growth, in which fatty degeneration readily occurs ; the characters of the tissue vary as one or the other process predominates. It consists essentially, according to Pye Smith, of a chronic hyperplasia of the deeper layer of the cutis, in which the papillæ and the epidermis on the one hand, and the subcutaneous connective tissue on the other, are only secondarily

involved. The young leucocytes may go on to form new connective tissue cells, and ultimately adipose tissue, or they may never become organized, undergo granulo-fatty degeneration, and ultimately result in a detritus of oil-drops, calcareous particles and cholesterine crystals. Hebra, however, (and he is supported in his opinion by Geber and Simon) maintains that two distinct processes are concerned in the production of xanthoma; first, a form in which there is hypertrophy and degeneration of the sebaceous glands, being really identical with milium, and which he calls vitiligoidea; and, secondly, a form in which there is a true connective tissue new growth, which he denominates fibroma lipomatodes.

The first view is, however, the correct one; and under the head of diagnosis will be given the points showing that there is never any demonstrable affection of the sebaceous glands, save, perhaps, secondarily, in true xanthoma.

Etiology.—Nothing positive is known in regard to the etiology of this remarkable condition. It has been claimed that it has some connection with diseased states of the liver; and in fact jaundice has been noticed either just previous to the development of the disease or during its course in quite a number of cases—perhaps in over half of those recorded. Especially is this the case in the multiple form of xanthoma. In the twenty-seven cases collected by Kaposi it was observed in fifteen. It has been supposed by Fagge and Murchison to be due to the circulation of bile-pigment in the blood. But in very many cases no anomaly of the liver at all was noticed, and this idea as to its causation is rejected by many authorities. It has been noticed to be hereditary in some cases.

Diagnosis is easy. Its color, site, structure; its circumscribed, roundish form, and its occurrence in tubercles and laminæ sufficiently characterize the disease. Only one affection can be confounded with it; milium may be mistaken for the small, tuberculous form of xanthoma—or vice versa. An aggregation of milium papules, which may occur in the characteristic situation, may look like xanthoma, but on breaking the epidermis over one of them the characteristic contents can be

squeezed out. This is never the case with the disease under consideration ; only a little blood and serum, never any fatty substance, can be thus obtained from them.

Prognosis.—Xanthoma is a very slowly progressive disease, and may last a lifetime. It has been observed to undergo spontaneous resolution. (Legge). Beyond the disfigurement, it occasions no inconvenience, save perhaps when by occurring on the hands it interferes with the patient's avocation. It has never been known to undergo any deleterious degeneration.

Treatment.—It may be necessary for appearance' sake to destroy the growth. Excision may be practiced, to be carefully done when the disease occupies its usual site, the eyelids, to avoid ectropion. The curette may be used, or even caustics. Erasmus Wilson believes in the connection of the disease with liver trouble, and recommends nitro-muriatic acid and bitters, combined with an occasional dose of blue pills ; later, arsenic may be employed. Besnier claims that he has seen rapid disappearance of the tubercles under the use of phosphorus internally, followed by turpentine.

LIPOMA.

Syn.—Fatty tumor ; steatoma ; adipoma.

Definition.—Lipoma is a circumscribed or diffuse cutaneous or subcutaneous tumor composed of fatty tissue.

Symptoms.—Lipomata may occur in any of the places where fat naturally exists in the body ; and most commonly in the integument or subcutaneous tissue. They are sometimes congenital, but may appear at any time ; and they are far oftener found in the female than in the male subject, the proportion being something like three to one. They are usually single, but sometimes the whole integument is studded with them ; I have seen a case in which several score were situated under the skin upon various parts of the body, and Weber has counted two hundred on one person. When single, they may be very large, weighing several pounds ; when multiple they are usually

small. They usually appear as circumscribed, subcutaneous, freely movable tumors, the skin over which is entirely normal, and generally freely movable. They are not painful, save when they accidentally cause nerve pressure. When the lipoma is diffuse it appears simply as an excessive accumulation of fat in some special part, as is seen in the common double-chin.

The encapsulated variety may change its position in the course of time from its own weight; thus there is recorded a case where one commenced at the umbilicus and finally slid down under the skin until it found a resting place in the perinæum.

Anatomy.—Lipomata are tumors composed of ordinary fatty tissue, *i. e.*, of connective tissue the cells of which are distended with oil globules. But the cells are larger than in the ordinary tissue; and the amount of fluid is the cause of the false fluctuation so plainly perceived in many of them. Though usually only present upon the skin, they have been found upon the mucous membrane of the stomach and intestines. Fibrous tissue, or even bone may be found combined with the fatty growth. They are occasionally pedunculated. They may persist unchanged for a lifetime, or undergo a fatty or calcareous degeneration or necrosis. These circumscribed fatty growths possess a life to a certain extent independent of that of the rest of the organism. Cornil and Ranvier state that they do not partake in the emaciation from fevers, wasting diseases, etc., when the latter attack their possessors.

Diagnosis.—Neither the diffuse nor the circumscribed form can well be mistaken for anything else. In the latter form the tumors are more or less firm or lobulated; they are usually freely movable, but in some cases the skin may be attached to the growth.

Prognosis.—They are perfectly benign in spite of their occasional heteroplastic origin. They may be very discommoding by reason of their size or situation.

Treatment.—Unless they are serious inconveniences the circumscribed tumors should be left alone. Excision is the proper

plan to resort to. With even greater force does this apply to the diffuse form ; much dissection is required, and the operation is often formidable.

ANGIOMATA.

Angiomata are new growths composed of vascular tissue ; either the blood or the lymphatic vessels being chiefly involved. It is important to distinguish simple dilatations of pre-existing vessels from real new growths, where new vascular tissue has been formed. Where these tissues are composed of blood-vessels they form the angiomata proper ; when they are composed of lymphatic vessels they are designated lymphangiomata.

ANGIOMA.

Syn.—Nævus vascularis ; nævus sanguineus ; angio-elephantiasis ; telangiectasis ; tumor cavernosus ; nævus flammens ; fungus hæmatodes ; aneurysma spongiosum, etc. Port-wine stain ; mother's mark, etc.

Definition.—New growths of the skin composed of vascular tissue. They are distinguished by their color, which varies from light red to deep blue, according to the relative amount of arterial and venous radicles involved, and by their compressibility.

Symptoms.—In spite of so many designations, we speak of all these growths under the general name of nævus. For convenience, however, nævi have been classified under four heads, in accordance with certain variations in their intimate structure and external appearance. These subdivisions, under which we shall consider them, are :

1. *Telangiectasis.*
2. *Nævus vascularis.*
3. *Angio-Elephantiasis.*
4. *Tumor Cavernosus.*

Various other affections of the skin are also called nævus. Thus we have nævus pigmentosus, n. spilus, n. verrucosus, n. lipomatodes, n. pilosus, n. papillaris, n. unius lateris, etc. These, however, are not vascular new growths, to which it would be desirable to restrict the term nævus. Most of these will be found described under the head of nævus pigmentosus.

1. *Telangiectasis.*—Nævus flammens, telangiectasie, tâche, port-wine stain, mother's mark, etc., consists of a dilatation of the capillaries and fine arterial and venous branches in a certain area of skin, together probably with a very small new growth of vessels of the same order. In appearance they form a simple stain in the skin or a plexus of dilated vessels, perhaps the color of which varies from bright red to a blue, or even a dark purple color—depending upon the preponderance of arterial or of venous branches in the spot. Their size ranges from that of a small pea to large diffuse areas of dilated vessels. They are seen chiefly on the face and chest. They all possess the peculiarity of being compressible; pressure empties the vessels and the color fades out, to return again as soon as the weight is removed. In some very extensive cases, however, only a small proportion of the vessels at any one spot are dilated, and there is consequently not a circumscribed patch of the disease, but a diffuse marbling of the skin. This has been observed to involve both entire legs, and even larger areas.

Telangiectasis, unlike most nævi, do not begin in childhood; they commonly appear during middle life, and increase in size and number as the patient progresses toward old age. These are most commonly found upon the eyelids, also nose, cheeks, ears, and neck; more seldom they appear upon other parts of the body. When situated about the nasal or buccal orifices they may spread to the mucous surfaces, they are then very liable to be injured, and to bleed profusely. Occasionally they cover, more or less completely, wide areas of the skin. The rosacea, which we see so commonly on the central region of the face, with or without the concomitance of acne, is a symptomatic telangiectasis; as is also the dilatation of vascular

areas which we see in connection with thoracic tumors, cardiac lesions, etc. We sometimes find the minute vessels enlarged in cicatricial tissue, especially in that left after the subsidence of the lupus diseases.

Such dilated vascular areas may be distinguished from hyperæmic redness by the absence of heat, pain and swelling, and by their history. They usually persist for life when once formed, and are not liable to undergo change.

2. *Nævus Vascularis.*—Nævus sanguineus, nævus congenitale, the nævus par excellence, is an abnormal vascularization of a portion of the integument, with sufficient new vessels and new connective tissue to form a distinct tumor. They are either congenital, or are acquired during the first few months of life. They appear in varying form and size. Sometimes they are merely small bluish-red or violaceous tumors, but little elevated above the skin; or they may form prominent, turgescent, or even pulsating masses. Their surface is usually smooth; if it be rugose they form the nævus tuberosum. They vary much in size. They are most commonly found about the head; are single or multiple, and may be pigmented or associated with warty growths (angioma pigmentosum et verrucosum). The tumors are always compressible, and lose their characteristic color when deprived of blood; those around the face become turgid when the patient coughs or cries, and fade away almost entirely when, as in the fainting condition, the blood leaves the peripheral portions of the body.

These ordinary nævi are very common, indeed. According to Depaul, one-third of all the children born at the Clinique de la Faculté Medicine at Paris, come into the world with these malformations, which in most cases disappear spontaneously during the first month of their life. They are commoner in males than in females.

3. *Angio-Elephantiasis.*—Angioma elephantiaticum, a. lipomatodes, or a. neuroticum, is a form of vascular new growth, which begins in the subcutaneous connective tissue and spreads only secondarily to the skin. It occurs in large tumors of

characteristic compressibility and color, which may cover the greater part of the limb with their sponge-like masses. On elevating the tumor it rapidly empties itself and collapses; but swells out again immediately, when the pendent position is reassumed. The new connective tissue growth here plays a much more important part than in the ordinary nævi; the tumors sometimes grow rapidly and cause, by their pressure, degeneration of muscle and nerve, and atrophy of bone. They are often found combined with painful neuromata.

4. *Tumor Cavernosus* differs in various ways from the ordinary nævus. In the first place the tumor is limited by a connective tissue capsule, then a framework of the same tissue ramifies through the growth and forms septa, which extend through it in various directions. In the interspaces between the septa the blood circulates freely; in fact, the whole structure is analogous to that of cavernous tissue, as seen normally in the genital organs. They possess, to an eminent degree, the properties of compressibility and erectility. They are not very often seen on the skin. In appearance they are much the same as an ordinary nævi.

Etiology.—We can not say anything with certainty in regard to the etiology of the angiomata or nævi. In popular estimation, "impressions," etc., made upon the mother during pregnancy are looked upon as causative, and many stories are told where a sudden fright, the sight of blood or of a conflagration, a blow, or other injury about the mother's face, has been followed by nævi on the child, corresponding, perhaps, in color or site, to the impression. But this etiology, to-day at least, is not proven, and we know absolutely nothing as to their real cause.

Course.—These vary very much. A certain number of these vascular nævi undergo retrogressive changes during the first year or so of life, and eventually disappear, either wholly or in part, leaving white, shining, scar-like pigmented spots. Others again, increase in size during the first years of infancy, and then remain stationary during the lifetime of the individual, perhaps to undergo involution if the patient

attains old age. The more vascular and erectile they are, the more likelihood there is of their increasing in size. Sometimes they remain quiescent for years, and then, without appreciable cause, begin to grow, invading the neighboring skin and mucous membranes, the subcutaneous tissue, and causing degeneration and atrophy of the deeper parts; they then form the angio-elephantiasis; once stationary, they are injurious chiefly as deformities, though the liability to dangerous hæmorrhage when they are wounded must be borne in mind. The telangiectases are usually congenital, and undergo but very little change.

They all tend, after a time, to become stationary in their growth, and then to degenerate. They may undergo degeneration by ulceration, or even sloughing, and the process is accelerated when the individual is in poor health. We often see them disappear rapidly after measles or other fevers. Cystic degeneration is also met with.

Anatomy.—Nævi are usually situated in the skin, in the papillary and upper layers of the corium, and in the subcutaneous connective tissue. They consist of capillaries, small arteries, and small veins, most of them of new formation; they are dilated and deformed, as are also the original vessels of the part. These vessels are contained in a fibrous stroma; for there is, probably, always more or less of a new growth of connective tissue in these tumors, though in the telangiectasis it may be hardly discernible. The color varies in accordance with the preponderance of venous or arterial radicles in the tissue. In the simple, flat angioma, the nævus flammens, the dilated and hypertophied vessels, new and old, are chiefly capillaries, and are in the upper part of the true skin. In the lobular angiomata, or nævi proper, and in the larger tumors, there is always more or less connective tissue between the convoluted vessels. Hair-bulbs, sweat, and sebaceous glands are occasionally found involved in these tumors. They may, as before stated, be verrucous or pigmented.

In the angio-elephantiasis we see the greatest amount of connective tissue growth.

The cavernous angiomata (tumeurs érectiles of Dupuytren) are composed of ordinary erectile tissue. The alveoli communicate irregularly with each other, and blood circulates freely in the cavernous system, which stands between the arteries and veins instead of the usual capillary one. The circulation in them is very active, and they are liable to sudden changes of volume. The walls of the alveoli are composed of connective-tissue; they may contain organic muscular fibres, or nerve filaments, or even vasa vasorum. The alveoli themselves are lined by an endothelium exactly similar to that which lines the veins. Exercise or emotion causes turgescence of these erectile tumors; they often pulsate.

Diagnosis can give but little difficulty. The flat claret-stains, or the red or blue erectile tumors are unmistakable.

Prognosis must always be cautiously expressed. In general, the simple, flat, claret-stains give a more favorable prognosis than the erectile tumors. It is impossible to tell, save by watching its course, whether a nævus will remain stationary or will retrograde, or whether, on the other hand, it will extend and form one of the above-mentioned large, erectile tumors. We can rest satisfied so long as the nævus does not extend; when it begins to spread rapidly we must interfere.

Treatment.—An ordinary angioma need not be treated unless it is growing rapidly, or is so situated as to be an eyesore. It will sooner or later, if left to itself, retrogress. If, however, it is decided to treat it, its removal may be effected in a variety of ways.

For the telangiectasis, Squire's method of linear scarification, or Sherwell's of punctate scarification, have given good results. The former consists in the "cross-hatching" with the knife of the surface of the nævus by a series of parallel lines about one-sixteenth of an inch apart. The ether spray may be used before operating to avoid pain, and pressure employed for a short time afterward to prevent bleeding. It is the treatment that has been successfully employed in advanced cases of rosacea, which is really a telangiectasis. Sherwell uses a number of needles arranged in a bundle, about one-sixteenth of an

inch apart, which can be made, by means of a spring, to penetrate the nævus. It is often advisable to use a 50% to 90% solution of carbolic, or a 25% solution of chromic acid on the needles. When the bleeding ceases, the parts should be washed with alcohol, and a thick layer of collodion applied.

In the smaller port-wine stains good results have been obtained by the use of the curette, which may also be employed for the warty and pigmented nævi of moderate size.

If the spots are very small, simple puncture with a red-hot needle, or a needle dipped in nitric acid, will suffice for the destruction of the growth. Even simply painting the surface with nitric acid may be sufficient in very superficial cases.

Duhring calls special attention to the use of iodium ethylate in these cases, as well as in the smaller forms of nævus proper. To Dr. B. W. Richardson is due the credit of its introduction. Metallic sodium is to be added to absolute alcohol, and applied at once by means of a glass rod to the affected part. It is important to have absolute alcohol ; for if it contain water, caustic soda and not sodium in the nascent state is set free. The pain is not severe, and it can be lessened, if need be, by the addition of an alcoholic solution of opium to the ethylate of sodium.

Caustic potash (ʒ i.–iv. to ℥ i.) may be used, two or three applications generally sufficing. Chloride of zinc may also be employed.

Bligh recommends painting the growth with liquor plumbi subacetatis daily, and says that usually in about four months it becomes clotted over with white spots, which increase in size and coalesce, until the whole disappears.

For the vascular nævi injections of various substances, calculated to cause coagulation of the blood in their vessels, have been employed. The tissue of the tumor must be torn up with a needle, and then about twenty drops of a solution of chloride of zinc (grs.–xii. to ℥ i.), or tannin (ʒ i. to ℥ i.), or of the tincture of the chloride of iron, or of the chloride of manganese, or of cantharidin, may be injected into the centre of the tumor. But this method is open to the serious objection that it often causes

inflammation, suppuration, or even sloughing of the growth, and thus a greater deformity than is necessary. There is also the danger from gangrene or pyæmia, or from embolism ; and that this latter is not a fanciful one is shown by the fact that Bryant lost a patient a few minutes after operating by this method on a nævus of the cheek. He recommends the application of a ligature to the base of the growth, or a metallic ring, before injecting..

When the nævus is pendulous and can be isolated, or when it is of the angio-elephantiasis variety, excision or ligature, or a combination of them, will probably have to be resorted to. It is best to pass ligatures or pins through the base of the growth, so that pressure may be quickly applied in case of excessive hæmorrhage. If it is decided to use the ligature, it is often sufficient to secure a part of an extensive growth, since the inflammatory action thus set up extends to the rest. A pin may be passed under the growth and a needle with double ligature at right angles to it ; the nævus may then be tied wholly or in part. The strangulated part should be punctured to permit of more perfect occlusion. But for the details of the best mode of operative procedure for these tumors the reader is referred to the surgical text books.

Electrolysis is one of the latest and most eligible methods of treating nævi. It has been very successful ; it is safe ; there is no subsequent pain, and the scarring is reduced to a minimum. Six to twelve cells are needed ; one or more platinum or steel needles are connected with the negative, and one needle, or a charcoal point, if the growth is large, to the positive pole. Small gas bubbles appear at the side of the needle, the blood clots, and the tumor turns bluish white. It is said that sloughing and even suppuration may be avoided in this method of procedure.

The galvano-cautery is highly recommended by many authorities. The knife must be white-hot to retain its heat in the deeper tissues. It is said by Dawson to produce a clot which is rapidly organized. In large nævi a part only should be operated on at a time.

Besides these, collodion and corrosive sublimate (gr. viii.- ʒ i.) has been successfully used. Neumann recommends an ointment composed of tartar emetic, gr. ix., emplastrum adhesivum, ʒ i., for smaller nævi, especially of the scalp. It causes little pain, suppuration ensues, and eventually a flat, thin, soft scar is left.

Vaccination has been very satisfactorily employed for the removal of nævi. The vaccine matter should be very freely spread over the surface of the tumor. It is better to make the punctures with a strong needle, as the blood following lancet cuts is apt to wash away the vaccine matter. The punctures should be half an inch apart, and may be made in the tumor or in its immediate circumference. It is said that large tumors have thus been cured, and Ragaine and Paul report numerous erectile nævi successfully treated in this way.

Finally, in the large angio-elephantiasis and cavernous tumor, extensive surgical operations, even amputation of a limb, may be required.

LYMPHANGIOMA.

Syn.—Lymphangiomata ; lymphangioma tuberosum multiplex (Hebra) ; lymphangiectodes (Tilbury Fox) ; lymphatic warts.

Definition.—A new growth of the skin composed of dilated and hypertrophied lymphatic vessels.

Symptoms.—Hebra first described this very rare disease, and a representation of the case is to be found in his atlas of skin diseases. Kaposi has seen a single case (Haut krankheiten, p. 630); Pospolow has reported one (Viertelj. für Derm. ü. Syph. 1879); and, finally, Van Harlingen has described one (Trans. Am. Dermat. Assoc., 1881). They all agree in their essential features, and definitely fix the existence of the malady. The disease exists in the cutis alone, and is to be distinguished from the cavernous lymphatic new growths which have been described by Billroth and others under the name of *makrochilie*, in which the dilated lymphatic vessels start from the subcu-

taneous connective tissue, and only secondarily involve the skin.

The disease appears in the shape of a varying number of slightly elevated tubercles. They do not itch; they are round or oval, and are of a brownish-red color. Special attention is called to their peculiar transparency. They are moderately hard, are situated in the cutis, and can be readily made to sink below the level of the surrounding skin. Their surface is smooth and flat, and they bear considerable resemblance to the large papular syphiloderm. In color they are whitish, or even of a lilac tinge. The tumors are usually multiple; Kaposi's case had hundreds of them; Van Harlingen's, also, a great number. In size they vary from a small pin-head to hazelnut size; they are usually compressible. They have been found in connection with dilated bloodvessels (telangectiases) and pigmented spots.

They are generally congenital, or appear in early youth. They grow very slowly, and never show any tendency toward malignancy. In the reported cases two have occurred in women, and all the patients were of middle age.

Anatomy.—These tumors have been examined by Kaposi, Biesiadecki, and Van Harlingen, and have been found to consist in every case of immensely dilated and hypertrophied lymphatic vessels. The whole corium is perforated by these channels, and there is, as in the analogous blood-vascular form of disease, a considerable amount of connective-tissue new growth.

On excision of a papule, it is found to consist of a pearly-white gelatine-like substance. Under the microscope are seen enormously developed lymph vessels, still lined with epithelium, imbedded in a stroma of small-celled and fibrous tissue.

Etiology.—We know as little in regard to the cause of the dilatation of lymphatic vessels as we do of those of the blood-vascular system.

Diagnosis.—Peculiar stress is laid on the transparency of the tumors. Its history, microscopical structure, and course, distinguish it from syphilis, the only disease which it resembles.

Prognosis.—The little tumors are harmless and injure only by their unsightliness. Occasionally they are somewhat painful to the touch. They increase but very slowly, and show no tendency toward malignant degenerations.

Treatment.—Is of no avail. The general health remains good, and surgical interference is out of the question.

NEUROMA.

Definition.—Single or multiple, pin-head or nut-sized, usually painful papules or tubercles situated in the skin.

Symptoms.—This is a very rare disease. All cases which have been observed, have occurred in men at middle or advanced life. It appears on the shoulders, arms, thighs or buttock, in the form of numerous, disseminated, pin-head to hazelnut, round or ovalish tubercles or nodules, which at the outset are either painful or painless, and later painful. They are firm, immovable and elastic. In Dr. Duhring's case the disease began at the age of sixty years, and consisted of small rounded tubercles seated upon the shoulder and attended with itching but not pain. The number of tubercles continued to increase, and finally the eruption consisted of a large number of closely-seated, small, split-pea sized, firm, flattened tubercles, immovable, firmly incorporated with the skin and extending to the subcutaneous tissue. They were of a pinkish color, and fine, laminated, glistening scales were produced over them. Violent paroxysmal pain, which did not appear until the disease had lasted three years, was present. The paroxysms of pain lasted usually one hour. The general health of the patient was good. Microscopical examination of the tumors showed them to be composed of nerve fibres, yellow elastic tissue, bloodvessels and lymphoid cells.

MYOMATA.

Myomata of the skin have been described by Virchow, Foerster, Besnier and others.

They consist either of single tumors, the size of a lentil to

that of an apple, situated on the nipple, scrotum, labia majora, thigh, hand, foot ; or as numerous growths scattered over the whole body. They are either flat or pedunculated, and generally painless, though sometimes tender upon pressure. They are round or oval in form, pale red color, and have a smooth surface.

Anatomy.—They probably arise from the muscles of the skin, and consist either entirely of unstriped muscle fibres or of these and some connective tissue.

OSTEOMATA.

Osteomata have been observed by Wilchens and Virchow. They arise generally in old persons and appear as small bodies superficially seated in the skin. A considerable number may be present. They consist of genuine bone structure and are derived from the connective tissue.

ADENOMATA.

Adenomata arise either from the sweat or sebaceous glands, according to a number of observers, but whether the tumors referred to have been examples of true adenomata or of a cancerous nature still remains a matter of some doubt.

CLASS VIII.

NEUROSES.

The functional disturbances of innervation of the skin comprise but few affections. There may be derangement of motility, of sensibility, or of the vasomotor functions (including the secretory and trophic changes under this head).

Of late years it has become the custom to refer many of the diseases of the skin considered in other sections of this work to neuropathic influences. Undoubtedly zoster, atrophy and hypertrophy, anidrosis and hyperidrosis, and many others, are trophoneurotic in origin; but it is well to reserve the title of neuroses for those affections of the skin in which there occurs no demonstrable change in any of its structures. Their symptoms are purely subjective, though various secondary lesions, such as excoriations and blood-crusts, may be accidentally present.

The only disorder of motility to be referred to here is the "cutis anserina"—"goose-skin," in which the skin on various parts or over the entire body is transiently covered with small white, pin-head papules, most of which are pierced in the centre by a hair. The condition is due to a spasmodic contraction of the arrectores pilorum under the influence of sudden changes of temperature, psychic impression, such as fear, horror, etc. The hair displaced from its normal axis, causes traction upon and slight elevation of the skin around its base. Cutis anserina is a physiological and not a pathological appearance.

Vasomotor disturbances, though essentially neuropathic, are not to be considered here, inasmuch as they necessarily cause some objective symptoms.

Disturbances of sensibility comprise, therefore, all the true neuroses to be described here. They consist of hyperæsthesia, and anæsthesia, hyperalgesia and analgesia, pruritus, etc. All these sensory disturbances occur, it is true, as symptoms of various diseases of the central nervous system and internal organs; but they also occur as idiopathic neuroses, or idio-neuroses (Ausspitz); and as such we will describe them here.

HYPERÆSTHESIA.

Hyperæsthesia of the skin in the immense majority of cases is a symptom—and a symptom alone. As such we see it occurring in various inflammatory and other affections of the central nervous system, or in conditions affecting the peripheral nerve branches, as their infiltration by lepra-bacilli or the inflammation of the spinal ganglia in zoster. As a neurosis it occurs oftenest in hysteria, of which it forms a well recognized symptom. But hysteria is an affection of the central nervous system, and hyperæsthesia cutis is but one of its multiform manifestations. As an idiopathic neuro-dermatopathy pure and simple it rarely or never occurs.

The hyperæsthesia may be general or circumscribed, it may affect one lateral half of the body, or individual limbs, or even spots of skin of very small extent. In marked cases the slightest pressure, even that of the clothing, becomes unbearable. It may be temporary or permanent. Its prognosis and treatment is in every case that of the affection which causes it.

ANÆSTHESIA.

Anæsthesia may vary just like hyperæsthesia cutis; it may be local or general, diffuse or circumscribed. The integument is numb and senseless, but otherwise usually unchanged. Anæsthésia of the skin may be idiopathic, as from cold; but it is usually symptomatic, as from injuries to nerves, diseases of the central nervous system, leprosy, and syphilis. Hysteria is a frequent cause.

The affection is rarely a dermato-neurosis, pure and simple.

Hyperalgesia and *analgesia* may be regarded as varieties of hyperæsthesia and anæsthesia. They may occur alone or in connection with them. The excessive sensitiveness or absence of sensitiveness to pain may be symptomatic or idiopathic ; in fact, the same remarks apply to both sets of affections.

DERMATALGIA.

Syn.—Dermalgia ; neuralgia of the skin ; rheumatism of the skin.

Definition.—Dermatalgia is an idiopathic functional nervous affection of the integument, characterized by pain in the skin alone, perhaps accompanied by morbid sensitiveness, and unattended by any objective symptoms.

Symptoms.—Dermatalgia consists of attacks of pain in the skin, usually in conjunction with a more or less pronounced sensitiveness of the part. The pain is spontaneous, constant, or intermittent ; it may be slight or severe, and is often of a burning, pricking or boring character. The peculiar sensitiveness is in many cases very marked ; the slightest touch or pressure being sufficient to induce an attack of the pain. Voluntary motion is just as effective as contact with foreign substances.

As is the case with the other affections of this section, dermatalgia may, though very rarely, occur idiopathically ; it is usually dependent upon some more deep-seated affection, usually some lesion of the nerve-centres.

The affection may be local or general, the skin itself being entirely unchanged in any respect. It is seen oftener in women than in men, and on hairy than on smooth portions of the skin. While slight touches seem to be very painful, severe pressure will sometimes relieve dermatalgia. Once developed, the disease tends to last indefinitely.

Etiology.—In cases dependent upon organic disease the etiology is plain, as it also is in those dependent upon anæmia, chlorosis, etc. We do not know the cause of the

idiopathic variety. It has been ascribed to rheumatism, and, indeed, most cases give a history of that disease. Some cases seem to be due to the direct influence of cold.

Diagnosis.—Its extreme superficiality, and the possibility of causing its onset by the slightest touch, will serve to distinguish it from pains situated in the muscles or deeper structures. It can hardly be confounded with anything else.

Treatment.—The underlying disease, if there is one, must be treated. Rheumatism must be always looked for. In idiopathic cases the galvanic current, or blisters, or belladonna ointment, or tincture of iodine may prove useful.

PRURITUS.

Definition.—A disease of the skin, characterized by the subjective sensation of itching alone, and without any structural alteration.

Symptoms.—Itching occurs as a symptom in many of the affections of the skin, especially in eczema, prurigo, scabies, urticaria, pediculosis, etc. But in the affection that we are now considering it forms the entire symptomatology of the disease, the other lesions of various kinds being merely secondary and caused by the scratching which the patient inevitably resorts to.

The itching of pruritus may be slight in degree, like that caused by the contact of rough clothing with the skin, or it may be very severe. In some cases a feeling of formication, rather than of itching, is felt. It may be partial or general over the body, intermittent or continuous. In many cases it is usually worse at night.

In accordance with the degree of itching will be the amount of scratching, and the extent and depth of the secondary lesions found upon the skin. Excoriations, blood-crusts, papules, etc., may be present to a varying degree. Sometimes, however, there are but few marks or none upon the skin, and we must rely upon the patient's statement for our diagnosis.

Several varieties of pruritus are mentioned, according to the

location of the disease. One of the commonest is *pruritus universalis*. Here the skin of the entire body is more or less affected. The itching is not continuous, but occurs in paroxysms; the immediate cause of an attack being usually changes of temperature, especially warmth, as when the patient is in bed. Violent motions of the body, or enforced quiet, and even psychic influences, such as a sudden thought on the patient's part of fear less the itching should begin, especially when he happens to be in some place where scratching is impossible, are sufficient to start the pruritus. A slight tickling sensation begins on some part of the skin, and gradually grows in intensity and extent. For a while the patient resists the impulse to scratch himself, but the very effort at self-restraint increases the feeling; the itching becomes more and more violent, and the patient strives by rubbing and pressure to still it. At length there comes a moment when self-control gives way, and the temptation to scratch becomes absolutely irresistible. Often his nails are not sufficient, and he has recourse to stiff brushes and rough bodies of all kinds to reinforce them.

At length, when the peccant skin has become crimson and bloody under his efforts, a feeling of burning from the irritation replaces the unbearable itching, and, tired out, he has obtained relief for a time.

The integument of a patient subject to pruritus universalis of any intensity shows the results, recent and past, of this active counter-irritation. Excoriations of varying extent, blood crusts, patches of reddened and hyperæmic skin are mingled with the dark brown pigmentation left from innumerable like lesions of the past. The skin may simply be dry and harsh; and there is often more or less of an urticarial eruption during the paroxysms of scratching.

Thus the disease lasts for years. Sleep is disturbed, for the attacks of itching are specially prone to come on in bed; and the patient spends night after night in fighting the enemy with the finger nails, brushes, cold water, etc., sinking exhausted into an uneasy slumber as morning approaches. Nutrition is

impaired; the mind sometimes gives way; and suicide has been known to result from the misery caused by pruritus universalis.

In the majority of cases, however, the disease is limited to some special part of the body, and is then called *pruritus localis*. Various varieties are to be considered. *Puritus vulvæ* or better, *p. pudendorum* is one of the most frequent kinds. The labia and clitoris are chiefly affected, and the continued rubbing and scratching eventually cause vaginitis, eczematous inflammation of the surrounding skin, hypertrophy of the clitoris, besides the immediate wounds and scratches. It occurs most often in women of middle age, and is sometimes combined with nymphomania, and very generally with the various phenomena of hysteria. In the male, the scrotum is most usually affected (*p. scroti*) though the perinæum and anus, but especially and most painfully the meatus and urethral mucous membrane may be involved; *pruritus ani*, affecting not only the skin of the anus and its neighborhood, but even the rectal mucous membrane as well. It often occurs in conjunction with piles. Eczema of the skin around the anus, and proctitis are commonly present. It occurs in both sexes, and even in children. It forms one of the most intolerable of these local pruriti. There may also be mentioned *pruritus palmæ manus et plantæ pedes* often combined with hyperidrosis; and *p. linguæ*, which is very rare.

The *p. hiemalis* to which Duhring has recently called attention, and which occurs during the winter months, is believed by Kaposi not to be a true neurosis, but an itching due to the presence of cutis anserina from the low temperatures, and the dryness of the skin natural at that season. *P. senilis* is an intractable form of the disease occurring in old people.

Anatomy.—Pruritus is a purely functional affection; a disturbance of sensation. There is no structural change, save secondary ones, no matter how long the disease may last.

Etiology.—The causes of the different kinds of pruritus are very various. In females, affections of the genito-urinary system, dysmenorrhœa, leucorrhœa, vulvitis, etc., or even the ad-

vent of gestation or of the menopause may cause it. In both sexes gastro-intestinal disorder, dyspepsia, costiveness, etc., are etiological factors. Bright's disease, tuberculosis, carcinoma of internal organs, and especially diabetes may cause it. The urine should always be examined for sugar in obstinate cases. Cutaneous pruritus occurs perhaps in half the cases of jaundice. It usually lasts but a few days during the onset of the trouble, but it may persist, and prove very annoying. It is generally supposed to be due to the deposition of bile pigment in the skin.

Various affections of the nervous system may cause pruritus; as may psychic impressions, violent emotions, grief or anger.

Finally there remains to be mentioned hæmorrhoids in elderly people, and worms in children, as causes of p. ani. Certain drugs, amongst which opium is the most common, also cause pruritus.

P. senilis is due to senile marasmus; the skin is faded, dry, and wrinkled.

Diagnosis.—Various diseases must be excluded before we can make the diagnosis of pruritus upon a patient who comes to us complaining of incessant itching. Yet the diagnosis ought not to be difficult, if we recollect that pruritus is a disease with but one symptom, and that any other symptom than itching, save the secondary phenomena of inflammation of the skin, unmistakably point to some other disease. Prurigo is a distinctly papular affection. In pediculosis the scratch-marks and pigmentations are specially localized on the loins and neck, and the parasite is present in the clothing. In scabies the location and the tracks of the itch-insect will mark the disease. In eczema the itching is comparatively slight, and entirely secondary to the eruption. For the minor points of differential diagnosis, the reader is referred to the appropriate headings.

Chronic urticaria and pemphigus pruriginosus would be more difficult to distinguish from pruritus.

Prognosis is moderately favorable. Pruritus sometimes disappears spontaneously or from therapeutic effort. But it may

last for years in spite of all we can do ; or it may be entirely incurable.

In pruritus senilis the prognosis is absolutely bad ; it usually lasts till death ends the patient's sufferings.

Treatment.—Innumerable are the plans of treatment and drugs recommended for this obstinate and distressing complaint, and very often the physician runs, in the course of time, through the whole list, to leave the pruritus at the end of the treatment just as bad as it was at the beginning. I shall mention only a few of the most useful remedies.

In the first place, the cause is to be treated, wherever that is possible. If the liver or gastro-intestinal tract is at fault, rhubarb, soda, magnesia, and the natural mineral waters of Carlsbad or Marienbad, etc., may be employed as indicated. Sexual and genito-urinary derangements are to be treated by appropriate sanitary and therapeutic measures. The general health should be carefully attended to ; appropriate diet and exercise must be prescribed. Quinine, strychnine, iron, ol. morrhuæ are useful adjuvants to this part of the treatment.

Several internal remedies are recommended. Murchison speaks highly of the bicarbonate of potassium when the pruritus is due to jaundice. The tincture of gelsemium, ten to fifteen drops every half hour, is thought very useful by Bulkley. Pick recommends pilocarpin muriate, grains one-eighth to a quarter hypodermically twice a day. Carbolic acid is of value taken in pills of one-half grain several times a day. Finally, Fowler's solution has been successfully used.

It is hardly to be expected that we shall cure the disease by means of local applications, yet the palliative treatment in this disease is always as important as the curative, and is too often the only one of much avail.

Cold or hot baths and douches, or vapor baths ; alkaline baths (℥ iv. of bicarbonate of sodium or borax or alum to the bath); sulphur baths (sulphuret of potassium ℥ i–iv. to the bath), may all prove useful, especially if some bland oil or glycerine, etc., be rubbed into the skin afteward. Cold, applied by painting the part with alcoholic or etherial evaporating

lotions, is beneficial in many cases. Carbolic acid is one of the most useful of the local remedies at our disposal. It may be used with potassa (ac. carbol. ʒ i, potassa ʒ ss, aq. ℥ viii.), or as a wash, m. v–x. to the ounce, together with a drachm each of alcohol and glycerine.

Ointments are sometimes very serviceable, especially of carbolic acid or of tar. Any of the ordinary formulæ may be used. Camphor and chloral hydrate, āā ʒ i. to ℥ i. of simple cerate is a most useful one.

In pruritus vulvæ injections are serviceable; of astringents, alum, tannin, etc., or tampons soaked in the same solutions, may be employed. An etherial solution of iodoform in spray, or an iodoform ointment, is occasionally serviceable.

For pruritus ani any of the above may be tried, but it is often necessary here to use anodyne suppositories, morphine, belladonna, etc. Equal parts of mercurial and belladonna ointment is useful. Very hot compresses will sometimes relieve the itching when nothing else will. Fissures may be treated by the solid stick, etc.

The secondary dermatitis, eczema, etc., must be treated on general principles. In extreme cases the internal use of narcotics, chloral, morphia, or even the internal inhalation of chloroform, may be necessary to procure rest.

CLASS IX.

PARASITÆ; PARASITES.

In accordance with the majority of writers upon dermatology, and on practical grounds, I have in this work placed as a separate class certain pathological conditions of the skin caused by the presence of certain vegetable and animal parasites. In reality such a division is inconsistent, and should not be admitted into a classification which has histology and not etiology as its basis. The changes caused by these parasites are the same as have already been described in treating of the inflammatory affections, the special clinical characters of the eruptions depending greatly upon the location and character of the parasite. As their mere presence upon the skin is not sufficient of itself to constitute a cutaneous affection, this latter existing only when they act as an etiological factor in producing nutrition changes in the tissues, changes corresponding to those already described among the inflammatory diseases, they should be regarded simply as one of the causes of this or that form of eruption. This was done by Hebra in the case of scabies, which he described under the head of eczema, and should have been followed in the case of the other parasites. The parasites which inhabit the skin are either vegetable or animal. The vegetable parasites belong to the class of fungi, and are met with almost exclusively in the epidermis, hair and nails. They have a local or mechanical effect upon the elements of the part, and by irritation produce a greater or less amount of inflammation, a hyperæmia, or exudation, or pustulation, or abscess formation. They are all contagious, but require suitable ground for their growth and development, hence all persons are not equally liable to be attacked by them.

The vegetable parasitic affections are tinea trichophytina, tinea favosa, and tinea versicolor.

TINEA TRICHOPHYTINA.

Syn.—Ringworm; herpes circinatus; herpes tonsurans.

Definition.—A contagious affection of the skin caused by the fungus trichophyton tonsurans and characterized by the formation of circles of vesicles, or reddish, scaling patches, or deep infiltrations, with broken off, stubbed hairs in the affected area.

Symptoms.—As the symptoms and treatment differ according to the part of the body attacked, it is necessary to describe separately the disease as it appears upon the scalp, bearded part of the face, non-hairy parts of the body, the genito-crural region, and the nails. According to its seat, it has received different names; thus, when seated on the scalp, it is called tinea trichophytina capitis or tinea tonsurans; when on the bearded part of the face, tinea trichophytina barbæ, or tinea sycosis; when on the body, tinea trichophytina corporis or tinea circinata; when on the genito-crural region, tinea trichophytina cruris or eczema marginatum; and when on the nails, onychomyosis.

TINEA TRICHOPHYTINA CAPITIS.

This affection is met with almost exclusively in children, especially in those with deficient nutrition, badly nourished and scrofulous, and is very rare in adults. It commences as one or more small, round, erythematous, scaly spots; or by a group of small vesicles. These spots soon increase in size by peripheral growth to form circular patches of various size, each patch being elevated, circular in form, covered with whitish, dry, adherent scales, and provided with hairs of irregular length, stubbed, broken off near the skin. As the patch spreads peripherically, small vesicles may sometimes be seen

at the margin, whilst the the remainder of the patch is covered with the thin, dry, whitish, adherent scales. Sometimes the scales are grayish or slate-color in the central part and yellowish or blackish-brown at the margin from drying up of the exudation in the vesicles. The skin may be almost normal in color but is generally red, swollen, elevated and tender. The hairs become affected early in the disease, the fungus passing down into the hair follicle and into the shaft of the hair, interfering with its nutrition and making it dry, brittle, and easily fractured. The hairs over the affected area lose their lustre, become dusty-looking, some fall out, others break off either within the follicle or at various distances from the free surface, so that the part is covered with dusty-looking hair of uneven length, the majority looking as if they had been nibbled off near the skin. Sometimes all the hairs of the affected part fall out, producing a temporary baldness, and if the skin is not red, appearances are produced exactly like in alopecia areata. Generally a number of patches are present, and as all do not form at the same time or grow with equal rapidity, we often have patches varying in size from that of a pea to an inch or more in diameter, on which all of the above characters may be observed on one or the other. A distinct ring-formed eruption is rare upon the head, as the centre remains elevated and scaling while the patch spreads at the periphery. By the union of neighboring patches large areas of eruption form, or the disease may occupy the greater part or the whole of the scalp, and then it resembles very closely a chronic squamous eczema. If but a single patch forms it rarely becomes larger than one inch or an inch and a half in diameter. Such a patch, with its sharp limitation, whitish or slate-color, dry, adherent scales, and short, stubby hairs is very characteristic and easily diagnosed. In ill-nourished and scrofulous children the inflammation produced by the fungus is much greater than the amount described above, so that instead of slightly raised, scaly patches there may be much infiltration and swelling of the part and formation of thick, yellowish scabs.

Tinea kerion (*kerion Celsi*).—In some cases of tinea tonsurans

of the scalp, especially in scrofulous children, a peculiar form of ringworm eruption occurs to which the name of tinea kerion or kerion Celsi has been applied. It bears the same relation to ordinary ringworms of the scalp that parasitic sycosis bears to ordinary ringworm of the head. The fungus passes deep into the hair follicles and there sets up an inflammation, the intensity of which governs the appearance of the eruption. As ordinarily met with, it generally begins like an ordinary patch of ringworm and afterward the affected portion of skin becomes swollen, elevated, red, shining, tender to pressure, boggy to the feel, sharply limited at its margin, and covered with a transparent, mucoid secretion which oozes from open hair follicle mouths. The patch is rarely larger than from one to two inches in diameter, and is round or oval in form. The condition of the hairs is similar to that in ordinary ringworm of the scalp. At first they are stubbed and later, many of them lie either loosely in the follicle or fall out, leaving the patch more or less bald. At first a little pus is present around the hairs, and later the part is studded with foramina corresponding to the open mouths of the follicles through which a mucoid secretion is poured. Although the patch is always boggy to the feel, there is no real purulent collection in the tissue unless there has been a much more intense inflammation present than is usually the case. When the inflammation is intense, the secretion which is poured out upon the free surface may be sero-purulent instead of mucoid in character. The posterior cervical glands are sometimes enlarged from absorption of exudation by the lymphatics. Kerion generally results from the passing of the trichophyton fungus deep into the hair follicles ; but, according to some, it may also be the result of over treatment of ordinary ringworm, or may follow eczema or sycosis of the scalp. The disease is generally chronic in its course and may, if untreated, persist a very long time. Sometimes, especially if the inflammation is intense, it disappears spontaneously.

Tinea trichophytina barbæ (parasitic sycosis).—This affection depends upon the trichophyton tonsurans fungus, the peculiar symptoms attending it depending upon the anatomical charac-

ter of its seat. The fungus passes down into the hair follicles, then into the shaft of the hair, and is found in the matrix and between the hair sheaths. The presence of the fungus interferes with the normal growth of the hair and acting as a foreign body, produces irritation and perifollicular inflammation, the intensity of which differs in different cases. The disease usually commences as a small, red, itching, scaly spot, like an ordinary ringworm, upon which in a few days vesicles, tubercles or pustules form, accompanied with swelling and induration of the part, and change in the character of the hairs in the affected area. Soon the whole part presents a nodular appearance, from the formation of deep seated tubercles, the result of a deep perifollicular inflammation. The tubercles vary in size from that of a pea to that of a cherry, and are either isolated or aggregated. There may be only one, or there may be several. When several are closely situated they form a circular mass, or are arranged in the form of a circle or a part of a circle, forming a nodular mass with sharply limited margin, broad, firm base deeply seated in the subcutaneous tissue, and an uneven, fissured and desquamating surface studded with broken and loose hairs. There is often a foul-smelling, sero-purulent secretion on the surface, which dries into a thick scab like an impetiginous eczema. If the scab is removed all the loose hairs will be removed with it, as their upper part is imbedded in the dried secretion. The amount of pustulation present varies much, depending upon the amount of irritation produced by the fungus. The hairs are affected in the same manner as in ringworm of the scalp. They are either broken off near the skin, or easily fractured, or lie loose in the follicle, surrounded or not by pus. Sometimes the hair follicles are destroyed by the inflammatory process and permanent alopecia results. The eruption is usually seated on the chin or submaxillary region. Patches of ringworm are generally present on other parts of the body. The course of the disease is very chronic, the eruption having a tendency to spread slowly but continuously, unless treated.

Tinea trichophytina corporis (tinea circinata).—Tinea circinata,

or ringworm of the body, usually begins by the formation of one or more roundish, slightly elevated, sharply limited, somewhat scaly, hyperæmic spots, the redness of which disappears almost entirely upon pressure. The patches soon increase in size by peripheral growth, the eruption continuing to retain its original character as regards shape, margin and redness, but with an increase in the amount of scaling. After attaining the size of from half an inch to an inch in diameter, the central part, as a rule, commences to return to a normal condition by a subsidence in the inflammatory process, as shown by the sinking in and pale color of the part. In that the patch continues to increase in diameter by peripheral growth whilst the centre closes up, a ring-like eruption results. When fully developed, a ringed patch consists of a normal central part; a more external, pale reddish, scaly portion; and the most peripheral part of a sharply limited, red, elevated, scaly circle. Sometimes a patch never develops to the ring-form, but remains as a diffuse, sharply limited, elevated, red, scaly eruption. Instead of the above manner of appearing, the eruption sometimes commences as a group of very small vesicles and spreads by peripheral growths of similar vesicles. This form is met with especially when the eruption spreads rapidly, or the skin is very irritable, and consequently reacts very actively to an irritant. Sometimes even pustules or bullæ form, the skin becoming much inflamed, and crusts forming from drying up of the exuded material.

If two or more rings coalesce the resulting patch has a gyrate form. There is rarely more than a few patches present on the skin at the same time, and individual patches rarely occupy a large area. After attaining a certain size they usually cease to grow at the periphery, but remain stationary, especially if seated where two surfaces touch each other, as in the axilla, groin, and breasts. The eruption may be seated upon any part of the body, but is most frequent upon the face, neck and back of the hands. It may be acute or chronic in its course, lasting only a few weeks and disappearing spontaneously, or continuing for years, in which case

it resembles patches of chronic superficial eczema. Itching is almost always present, and if vesicles or pustules form there will be a burning feeling in the part. If conveyed from the lower animals to man the eruption, it seems to me, spreads more rapidly and is accompanied with more intense inflammation of the parts than when conveyed from man to man.

Tinea trichophytina cruris (*eczema marginatum*).—This condition, which was regarded by Hebra as an eczema, but which has been shown to be produced by the trichophyton fungus, the special clinical symptoms depending upon the region affected; is found especially in the groin, commencing on that part of the thigh which comes in contact with the scrotum, and is more frequently on the left than on the right side, as the scrotum on the right side is generally separated from the thigh by the clothing. The eruption commences as a larger or smaller, roundish or oval, pretty sharply limited, red, elevated, discharging patch, which itches greatly. The eruption soon spreads peripherally until the whole area of scrotal contact is occupied, when it may remain almost stationary as regards extent, or it may extend down the thigh, over the buttocks, mons veneris, and to the other side, forming a symmetrical eruption. When the patch occupies an area even less than that of the scrotal contact the eruption shows the most active process to be taking place at the peripheral part. Here, as in ordinary ringworm papules, vesicles or even pustules are present, whilst the central part is red, elevated, discharging; with a few vesicles here and there, or perhaps only darkly pigmented from previous scratching. The margin is not always circular and sharply limited, but is sometimes irregularly shaped, with a raised border of discrete papules or vesicles. Sometimes a few small, circular, elevated spots like tinea circinata of the body are present outside the general patch. If the eruption is of long standing the skin becomes considerably thickened and much pigmented. The hairs do not lose their normal characters or break off. The course of the disease is very chronic, lasting, if untreated, perhaps many years, and if cured is very liable to return. It is not a frequent disease in

New York, but is often met with in tropical countries, especially in India.

Tinea trichophytina unguium (*onychymycosis*).—Occasionally the trichophyton fungus attacks the nail and produces, by its interference with its nutrition, changes in its shape and appearance. The nail becomes dry, opaque, dirty-white, thickened, of irregular shape, bent and soft, brittle and laminated, especially at the free border. It is generally met with on the fingers, the nails of the toes being very rarely affected, and it is very unusual for more than two or three nails to be affected in the same individual. The disease is very chronic in its course and difficult to cure. It is generally associated with patches of tinea trichophytina on other parts of the body, but may be alone present, the fungus in the nail remaining long after its disappearance on the cutaneous surface.

Anatomy.—The fungus produces more or less inflammation and structural changes in the skin in every form of the disease, the extent depending upon the situation of the fungus and the degree of nutrition and irritability of the skin. In tinea trichophytina capitis, if the fungus remains in the corneous layer there will be slight superficial inflammation, or perhaps only a hyperæmia ; but if it passes down into the hair follicles and into the hair shaft, or, as I have observed, even into the perifollicular tissue, then the nutrition of the hair is interfered with and the perifollicular inflammation will be considerable, especially in scrofulous and ill-nourished children. As the fungus passes into the hair shaft the latter suffers in its nutrition, becomes lustreless, disintegrates and is easily broken. (See figs. 76, 77, 79 and 80.) The perifollicular inflammation may be slight or of such extent as to destroy the hair follicle and produce permanent alopecia. In tinea kerion the glands of the skin seem to be affected as well as the hair follicles, and pour out a mucoid secretion. In this form, though there is no true suppurative process, the inflammation in the given area is so general, deep and long continued that the follicles are destroyed and permanent alopecia results. In tinea trichophytina barbæ the hairs are affected

early in the disease, becoming opaque, brittle and detached from the follicle wall. The amount of perifollicular inflammation is very great, much more than in any of the cases of tinea trichophytina capitis, and consequently the hair follicles are frequently destroyed. In tinea trichophytina corporis there is more or less superficial dermatitis, as in mild cases of eczema. In eczema marginatum the condition is more similar to that in vesicular eczema.

The disease is caused by the vegetable fungus trichophyton tonsurans, the appearance of the eruption in the different forms of the disease depending upon the anatomical seat of the fungus and the degree of irritability of the tissue

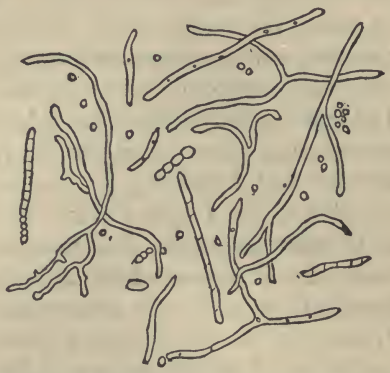


FIG. 75.—Mycelia and spores from a rapidly spreading case of tinea trichophytina corporis. The source of contagion was a cat.

of the part affected. The fungus consists of spores and mycelium. The slower the process of multiplication of the fungus, the greater is the number of spores present in proportion to the amount of mycelium, and *vice versa*. As the eruption always spreads by peripheral growth, more mycelia are present in proportion to the spores at the periphery that in the central part of the affected area. In tinea trichophytina capitis and barbæ especially, there are generally very few mycelia as compared with the number of spores present.

When conveyed to man from one of the lower animals, my-

celia are generally numerous. The spores are round, small, highly refracted and either single or arranged in rows, which are isolated or joined to mycelium. The mycelium generally consists of long, slender, sharply contoured, straight or crooked threads which send off, at irregular intervals, a few branches, and contain spores and granules. (See fig 75.) The anatomical

FIG. 76.—Free end of a hair shaft invaded by spores of trichophyton tonsurans. *a*, free surface of skin ; *b*, hair stump.
The free end of the shaft is jagged, bristly, and consists of broken filaments.

seat of the fungus differs in different cases. In some cases of tinea trichophytina capitis it is situated only in the corneous layer, or, in addition, in the upper part of the hair shaft, in-

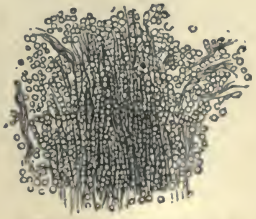


FIG. 77.—Portion of a hair shaft invaded by the trichophyton tonsurans.

terfering with the nutrition of the latter and dividing it into more or less broad longitudinal fibres, as seen in figure 76, or completely disintegrated, as seen in figure 77, in which a portion of a shaft of a hair is shown, crowded with spores and almost destroying all signs of structure.

There are always more fungus elements in the affected hairs than in the epidermis, and they consist almost exclusively of spores.

In severer cases of tinea trichophytina capitis the fungus passes down into the hair follicles and root of the hair, and may

FIG. 78.—Section of hair and adjoining skin in a case of tinea trichophytina capitis. Spores and mycelium are seen in the hair shaft, internal root sheath, corneous layer, mucous layer, and corium.

pass into the perifollicular tissue, as shown in fig. 78. This probably occurs in those cases which resemble in their clinical features cases of alopecia areata. Fungi may be found in all parts of the hair situated within the skin, but the greatest

number is present in that part seated above the neck of the follicle.

If the hair shaft is invaded, the effect may be a bending and subsequent breaking of the affected hair at a point midway between the rete and root of the hair, the bending and breaking being due to the pressure exerted upon the disintegrated hair by the normal growth of the shaft upward. This condition is shown in figures 79 and 80. In these cases no hairs may be seen in the openings of the hair follicles, or they may appear as black specks.

In tinea trichophytina barbæ the fungus is principally seated in the lower part of the hair follicle.

In ringworm of the body the hairs are free, the fungus being in the corneous layer.

FIGS. 79, 80.—Hairs showing bent shaft from upward pressure by normal growth of hair upon disintegrated portion.

In onchymycosis it is in the substance of the nail.

Ringworm will not grow upon every skin. For a suitable ground, the skin should be in a condition of mal-nutrition. It is more frequent in children than in adults. It is rare in infancy, and after puberty. It is met with most frequently in damp seasons and with persons who live in damp dwellings.

It is very contagious if the ground is suitable for its growth. It is frequently conveyed to man from the lower animals, as the cat, dog, horse, and cattle. When conveyed from these animals it generally rapidly multiplies on the new habitation.

Diagnosis.—Tinea Trichophytina Capitis.—Circular patches, covered with fine scales and provided with stumpy, nibbled-off hairs, are easily diagnosed, but in other forms the eruption may be confounded with eczema squamosum, seborrhœa, psoriasis, or alopecia areata. Eczema squamosum often resembles a tinea trichophytina capitis in the color and scaling, but the history of the eruption is different; it does not commence as a small spot and spread circularly and peripherally, the margin is irregular, and the hairs are firm, not loose and not fractured or nibbled off. In seborrhœa there are no signs of inflammation, the scales are fatty, not dry, the margin is irregular and the hairs are not broken off. In psoriasis the scaling is much greater, the hairs are unaffected and the eruption is generally present also on the extensor surfaces of the body. The greatest difficulty is sometimes to diagnose between alopecia areata and tinea trichophytina capitis. In alopecia areata there are no inflammatory symptoms present, no scaling, no nibbled-off hairs, but the patch is circular, and occasionally atrophic hairs are present in the affected area. Now, some cases of ringworm of the head show no signs of inflammation, no appreciable scaling, and no nibbled-off hairs, unless, perhaps, here and there black specks are seen with hair follicles, the end of a broken hair. Many of these cases are diagnosed alopecia areata, and the truth can only be arrived at by a microscopical examination of corneous cells at the margin of the patch, or of some hairs. If the case of ringworm, however, is classical in character, then the diagnosis is very easy, as in alopecia areata there are no broken hairs or scaling.

In *tinea kerion*, the boggy feel, the mucoid secretion, the foramina, the loose hairs, and the microscopical examination and detection of fungi in doubtful cases make up the diagnostic points in this form of the disease.

Tinea trichophytina barbæ may be mistaken for sycosis, acne, and the vegetating syphiloderms. I refer to the article on sycosis for all the points for diagnosis between the two diseases, which, in reality, bear but little resemblance to each other except in name.

In sycosis there is no fungus, there is active inflammation and suppuration, which is confined to the perifollicular region, and, consequently, there is a hair in the centre of every pustule. There are no deep-seated tubercular masses of infiltration, the hairs are healthy, and, at first, firmly seated in the follicle. When the papules of a syphilitic eruption appear as superficially eroded, moist papules arranged in circles or groups, the diagnosis is made by the presence of ulceration, the absence of fungus, and the history of the case.

Acne appears especially on non-hairy parts of the face, is generally a pustular eruption, the pustules being of short duration and discrete. Other symptoms are not necessary for a diagnosis.

Tinea circinata resembles eczema, seborrhœa, psoriasis, syphilis. In eczema the eruption is rarely circular in form, the margins are not sharply limited, except in gouty or rheumatic individuals, the inflammation and scaling is usually greater, and there is no tendency to clearing of the centre and assuming the ring-form. Seborrhœa, when located on the chest and back, often consists of circular patches, with or without a clear centre, and covered with scales. The scales, however, are greasy in character and they are seated upon a non-inflamed skin. In ringworm the scaling is always the result of a dermatitis. Psoriasis always commences and spreads in the same manner as tinea circinata, and, after attaining a certain size, clears up in the centre and forms rings with a sharply limited margin and normal centre. In psoriasis, however, the scaling is very considerable in amount, and consists of dry corneous cells, and not of cells and exudation as in cases of dermatitis. The patches are never formed of vesicles or inflammatory papules, they do not itch or discharge, they are generally scattered over a considerable part of the body, and, if limited in

number, are almost always present upon the extensor surfaces of the knees and elbows. In syphilis, when the small papules are arranged to form circles there is some resemblance in the eruption with that of ringworm, but the symmetrical character of the eruption, its distribution over a large part of the body, the history of slow formation of the ring, the elevation and dark color of the papules, are sufficient for the diagnosis.

Tinea trichophytina cruris bears the closest resemblance to an ordinary eczema of this region. In eczema the patch is like ordinary intertrigo, its greater portion consisting of a red, non-scaly, discharging surface, whilst the margin is irregular in outline, not sharply limited, and usually less inflamed than the more central portions. It may also last a number of years without extending beyond the area where two cutaneous surfaces come in contact.

Tinea trichophytina unguium cannot be diagnosed from psoriasis, eczema or lichen ruber of the nails without the microscope unless cutaneous lesions are present, as the appearances are similar as regards changes in the nail in these different diseases.

I have given the diagnosis between tinea trichophytina and those diseases having a resemblance in eruption, as it is to be made, from clinical observations, but in cases of doubt the microscope should always be employed. Especially is this necessary in cases resembling alopecia areata, and in onchymycosis. Scales from the periphery of a patch, or broken hairs, or scrapings of the nail should be examined in a five to fifty per cent. solution of caustic potash, the strong solution being used for nail substance, and examined after a few minutes with a lens, giving five or six hundred diameters at least. If the scales are very dry the air should first be removed by alcohol. The potash should never be mixed with glycerine as they form deceptive pictures. Unless the observer is a competent microscopist he should never pass an opinion upon shining bodies situated in epithelial cells, or in the centre of a hair shaft, as fat globules resemble spores in every particular, as shown under the microscope. They can only be diagnosed after coloring,

or treating by agents, which dissolve fat. If mycelium is present then there is no difficulty in diagnosis.

Prognosis.—The prognosis depends upon the situation of the disease, and the constitution of the individual affected. Mild cases of the scalp in well nourished persons can be quickly cured. In hospital cases and in scrofulous or badly nourished children, it is very obstinate. Tinea kerion is difficult to cure and generally produces baldness in the affected area. Tinea trichophytina barbæ is easily cured, but unless treated early the hair follicles may be permanently destroyed.

Ringworm of the body is generally easily cured, but relapses are not infrequent, if the general nutrition of the system is impaired. Tinea trichophytina cruris is usually very obstinate, and relapses are frequent. Onychymycosis is obstinate and requires long continued treatment.

Treatment.—The treatment is both local and constitutional. Many of the children affected with ringworm suffer from malnutrition. This condition must be remedied. Proper food, good air, cleanliness, and appropriate tonics should be given. Cod-liver oil and iron are always of benefit in these cases.

The local treatment depends upon the situation of the disease, and the anatomical seat of the fungus. In mild cases of tinea trichophytina capitis in which the fungus has not penetrated deeply into the hair follicle, the head should be well washed with soap and water every day, the hair in and somewhat beyond the affected area cut as short as possible, and anti-parasitic applications employed. I prefer a solution of corrosive sublimate, two grains to an ounce of alcohol, the solution to be applied with a stiff brush or spray, twice a day, until the fungus is no longer to be detected by the microscope in the hairs or scales. After removal of the disease, the washing of the head with soap and water should be continued for some time longer to prevent a relapse. Instead of the corrosive sublimate solution any of the mild parasiticides may be employed in the manner to be described for ringworm of the body. If the fungus passes down into the hair follicle and into the hair shaft, it is necessary not only to use parasiticides but also to epilate. All

loose hairs and all broken ones should be removed. This should be repeated daily, for by this epilation we not only remove an immense amount of fungus with the extracted hair shaft but are the better enabled to apply the parasiticide to the seat of the fungus. The parasiticide is to be applied each time after epilation. The corrosive sublimate solution can be employed, or one of the many anti-parasitic remedies. A six per cent. solution of oleate of mercury, applied every second day, is sometimes very efficient, as it penetrates the tissues. I have found it especially useful when the patches resemble those of alopecia areata where a penetrating preparation is indicated, as some of the fungus is seated in the perifollicular tissue. If applied too frequently it may irritate the skin too much, and it is contra-indicated if the eruption covers a large area. While precipitate ointment or an ointment of the yellow sulphate of mercury, half a drachm to the ounce, well rubbed in, may be used with good effect. If the case resists the above treatment and becomes chronic, it may be necessary to produce an acute inflammation in the part. Glacial acetic acid, or cantharidal collodion may be painted upon the part once a week, and mild parasiticides used during the interval. Croton oil, either pure or mixed with olive oil, according to the amount of irritation desired, is the most manageable substance. It is always necessary to produce a considerable amount of inflammation. After its production mild applications are to be employed. This procedure, however, is rarely necessary, as persistent epilation, an application of suitable parasiticides, together with internal treatment to improve the general nutrition, generally removes the disease. If the eruption is general, lotions or ointments should be employed. Lotions, when used, are to be kept constantly applied.

In tinea kerion all the hairs should be extracted and mild parasiticides afterwards employed. A weak solution of corrosive sublimate, or a lotion of carbolic acid, answers well. It is not necessary to first reduce the inflammatory condition present by usual antiphlogistic measures, as this is best accomplished by removal of the fungus.

In tinea trichophytina barbæ epilation should always be per-

formed and oleate of mercury employed to destroy the fungus. The face should be shaven daily. The disease is easily removed.

Tinea trichophytina corporis is to be treated by mild parasiticides. Before applying them, the part should be well washed with warm water and soft soap. The corrosive sublimate solution is a very efficient remedy, and should be applied once a day at least. White precipitate ointment or the ointment of the yellow sulphate of mercury is good. An ointment of chrysophanic acid is of decided benefit in tinea tricophytina of the body, but not so useful in that of the scalp. Lotions of sulphurous acid, either pure or diluted to the strength of one, two, three or four of carbolic acid ; of hyposulphite of sodium, a drachm to the ounce, constantly applied, are generally efficient parasiticides when the fungus is seated superficially, as is usually the case in ringworm of the body. Glacial acetic acid, tincture of iodine, carbolic acid, half a drachm to an ounce of glycerine, may be employed. Thymol, half a drachm, mixed with two drachms of chloroform and six drachms of olive oil, is highly recommended. If the disease shows a tendency to become disseminated, warm baths, washing with soft soap and subsequent sponging with alcohol, or the hyposulphite of sodium solution is advisable.

In tinea trichophytina cruris, the same measures are to be employed as for ringworm of the body ; but the applications should, as a rule, be more powerful. An ointment of chrysarobin, five grains to an ounce of ointment, or goa powder, ten to forty grains to an ounce of ointment, is often more efficacious than the previously mentioned remedies. Kaposi recommends a mixture consisting of one hundred parts of green soap, two parts of naphthol, and ten parts of spirits of lavender, to be rubbed in for two or three nights. Woolen clothes to be worn during its use.

For onchymycosis, the nail should be scraped as thin as possible without producing pain, and a corrosive sublimate solution, from two to five grains to an ounce of alcohol, applied two or three times a day. Oleate of mercury is useful,

but will not cure it unless the nail is scraped, as in my experience it will not penetrate nail substance. Creosote or carbolic acid, pure, or as a strong solution, may be used. The constant application of sulphurous acid should be tried if the other applications fail. Whatever treatment is followed, it must be persisted in for a length of time, as these cases are obstinate and difficult to cure. If the nail is very hard it can be previously softened with liquor potassæ, and the anti-parisiticide then applied.

Cases of tinea trichophytina should be isolated as far as possible, especially if occurring in an hospital. All contact should be avoided with lower animals having the disease, as it is much more contagious from them to man, than from one person to another.

FAVUS.

Syn.—Tinea favosa ; porrigo favosa ; dermatomycosis favosa ; crusted ringworm ; honeycomb ringworm.

Definition.—Favus is a contagious, vegetable, parasitic disease, due to the growth in and upon the skin of the achorion Schönleinii, and characterized by the appearance of small, pea-sized, circular, yellow, cup-shaped crusts, each perforated by a hair.

Symptoms.—Favus attacks especially the hairy portions of the body, and is found most commonly upon the scalp ; but it may also affect the nails, and even the non-hairy portions of the general integument, as the skin of the shoulders, thighs, penis, scrotum, etc. The disease begins as a more or less circumscribed superficial inflammation of the skin, accompanied with slight scaling. Itching is quite marked over the patch, and is usually the symptom that first directs the patient's attention to it. Within a short time one or more yellowish points appear underneath the epidermis, and surrounding a hair shaft ; these are the beginnings of the well-known favus-sculuta or cups. In the course of a few weeks the yellowish points, at first pin-head in size, grow to the size of perhaps

split peas, and appear as sulphur-colored, round or oval plates, with depressed centres, each one pierced through its middle by a hair. The margins of the crust are elevated above the level of the surrounding skin; its centre is depressed and umbilicated. By means of a pair of forceps it may be detached from its base, and drawn away along the shaft of the hair; an excavated, reddened, and perhaps moist surface is left behind, in which, however, the epidermis soon swells up and regains its normal level when the pressure is removed.

The favus crusts are composed of a series of concentric layers closely packed together. They are very friable, and break down easily under pressure. At first discrete, as the disease advances they fuse together into irregular masses; and in cases of some standing the individual cups may be no longer recognizable, the surface being covered with a thick, yellowish-white, crumbly, mortar-like mass, on removal of which an atrophied, dry or inflamed and moist, hairless surface is left. The amount of inflammation varies much in different cases. Pustulation or suppuration may be visible in or around the crusts; or the skin under them may simply be smooth, depressed, and atrophied.

Sooner or later the parasite invades the papillæ and hair shaft. The nutrition of the hair is interfered with, it becomes dry and lustreless and breaks off or falls out. Finally, the papillæ themselves are destroyed. The constant pressure of the growing fungus causes atrophy of the skin, which becomes depressed, hard, shining, and in which all glandular structures are destroyed. Actual ulceration does not occur.

Favus may remain for long periods confined to one spot, and is then called *f. discretus*. If it involves large surfaces, as the entire scalp, the name *f. confertus* is applied to it. It is a disease of essentially chronic course, lasting in some cases twenty-five years or more. It tends in the course of time to a spontaneous cure. After all the glandular structures are destroyed, the parasite, no longer finding a suitable nidus, disappears from the skin. In fact, the plant seems to thrive only in the glandular structures. When favus occurs upon non-hairy parts, as it

sometimes does, it usually ends of itself in a few months. It may occur as the discrete or more diffuse crusts; but the delicate follicles of the lanugo hairs are soon destroyed; the cups are detached, the hair falls out; but rarely does any atrophy or scarring result from the process.

Favus of the nails, onychymycosis favosa or tinea favosa unguium, is of rare occurrence, and is occasioned in favus patients by scratching the head and receiving the parasite under the finger-nail. Yellowish white mortar-like masses appear under the edge of the nails and in their substance; the organs are thickened, often split, and seem to undergo a kind of cheesy degeneration. The affection is a very obstinate one.

One other symptom of favus remains to be mentioned, and it is so peculiar a one, that with its help, in otherwise doubtful cases, we may arrive at a conclusion as to the nature of the disease. I refer to the odor always developed in well-marked cases of the affection. It has been described as a mouse-like smell; it is difficult to characterize it, but once appreciated it forms a fairly reliable symptom of the malady. Exactly the same odor occurs in the lower animals affected with favus.

As before stated, favus is almost always seen upon the scalp, but may occur upon other portions of the body. It happens with moderate frequency in the lower animals, especially among cats, mice, rabbits, horses and dogs. Cats often suffer from it, getting it from mice; and they in turn transmit it to the children that play with them.

Anatomy.—Favus is caused by the growth in the upper layers of the skin of a fungus discovered by Schönlein in 1839, and called by Remak, achorion Schönleinii. It may easily be seen by placing under the microscope a small portion of a favus-cup moistened either with water or better with dilute liquor potassæ. The mass is composed almost wholly of the luxuriant vegetable growth in various stages of development. The most apparent is the mycelium in the shape of flat, narrow threads, branching and inosculating with one another in various directions. Their diameter is about the 1-800 part of an inch, and their color a pale gray, sometimes

tinged with green. When in a state of fructification, these tubes are divided into numerous small compartments by delicate cross-lines, sometimes with constrictions, giving a chain-like appearance ; and in each compartment are seen young spores in various stages of growth. The spores or conidia are present in abundance amid the meshes of the parent growth. They are very small, of varying form, round, oval, flask or dumb bell shaped, and of a pale greenish color. Intermediate forms between the spores and mycelium are always present, and fungoid growths of various kinds, as well as micrococci and bacteria, are often accidentally in the field of view.

FIG. 81.—Spores and mycelium from a favus scutulum.

The parasite first obtains a lodgment in the funnel-shaped depression in the epidermis through which the hair-shaft emerges upon the surface. It grows luxuriantly in the upper part of the hair-sac, and insinuates itself on all sides between the superficial layers of the epidermis. When it reaches a short distance on all sides of the follicle-mouth, it breaks the looser layers and appears on the surface, giving us the familiar cup-shaped bodies. It also invades the hair-shaft itself, though not to the extent that the trichophyton parasite does. It penetrates between the cellular layers of the root sheath, and multiplies in the cortical substance of the hair. The nutrition of the hair is interfered with by the mechanical pressure of the growth upon the papillæ. The hair falls out, and eventually in many cases the

papilla atrophies, and a new growth becomes impossible. In cases of any standing the parasite may be demonstrated, not only in the cortical, but in the medullary substance of the hair. Splitting of the hair may occur, as in tinea tonsurans, but as a usual thing the hair falls out before that occurs.

In the skin itself the parasite usually confines itself to the upper corneous cells, and does not extend to the living tissues. In cases where the surface is covered by irregular, mortar-like masses of parasite—the entire upper layer of the epidermis will be found infiltrated with the achorion.

The corium itself is usually in a state of chronic inflammation, and suppuration, which may be quite abundant, often occurs under the crusts. Even where no pus is found the pressure of the parasite causes atrophy of the skin, and at last pit-like depressions or more extensive reddened scars are left. When the glandular structures are entirely destroyed, the achorion no longer finds a suitable nidus, and the disease, at that spot, is at an end.

Etiology.—Favus may occur at all ages, and in all conditions of life, but the individual susceptibility to its contagium varies greatly. We do not know the conditions that predispose to the reception of the parasite, but it occurs most often among the poor, and in children. In most instances a history of contagion may be obtained. It is probable that it is often transferred from dogs, cats, chickens, mice, etc., to children. In some cases, however, there seems to be no possibility of direct contagion, and we are compelled to assume that the spores have been carried to the patient in the atmosphere. The contagion is not very active. One member of a family often has it for a time without any one else being affected; and in the wards of our hospitals the favus patients mix freely with the other inmates for months without communicating the disease. In other cases it may run through a whole family; thus Duhring mentions an instance in which thirteen members of the same family suffered at various times from the disease.

Favus is a far commoner affection in Europe than it is here, forming in some places as much as one-half per cent. of all ob-

served skin diseases. In America it occurs not oftener than once in four or five hundred dermatological cases.

Diagnosis.—Usually the recognition of favus is easy. The peculiar, pale, sulphur yellow, friable, cup-shaped crusts, surrounding a hair; the inflammatory and depressed basin upon which the crusts are situated, and the mousy odor, are not found in any other affection of the skin. Even when the disease has ended, the cicatricial, depressed, glandless areas are quite characteristic.

But when the masses of the parasite have accumulated into irregular, heaped-up, mortar-like masses, intermingled perhaps with dirt and with dried pus, the affection may bear considerable resemblance to an impetiginous eczema. But in eczema the crusts are hard, moist, greenish-yellow, and a reddened, weeping corium is left on their removal; in favus the crusts are dry, brittle, straw-colored or grayish-white, and the subjacent skin is red, but is covered with normal epithelium. The changes in the hair in favus, the odor, and the atrophy of the skin are also useful in the differentiation.

If seems hardly likely that psoriasis or lupus erythematosus can be mistaken for favus. In any case the microscope would soon settle the question. Tinea tonsurans is wanting in the cups and mortar-like masses, and shows an abundance of nibbled-off hairs, is not usually so chronic in its course, and causes no scarring.

Prognosis—Is good as regards the general health, though not always favorable in respect to the local affection. Sooner or later the disease ends of itself, but leaves permanent baldness, atrophy of the skin, and cicatrices behind. The earlier in the disease treatment is commenced, the better the chance of mastering the affection. Some cases seem to resist all our efforts to destroy the fungus. Favus of the nails is liable to be especially obstinate.

Treatment.—The time required to treat successfully a case of favus of any extent will always be a long one. It usually takes months before we succeed in destroying the last spores of the parasite.

The first thing to be done is to thoroughly remove all the crusts and cups. This is readily done in twenty-four hours by softening them with oil, either simple or containing carbolic acid or naphthol. A few washings with soap and hot water, or with the tinctura sapo viridis will then suffice to remove as much of the fungus as is upon the surface. The task before us now is to destroy it in the hair-follicles, for, if left to itself, it takes but a few weeks to attain its former luxuriance.

To effect this end it has been proposed to cause such an amount of inflammation of the scalp that folliculitis and perifolliculitis is set up, and the hair-sac with the parasite, is cast off. Croton oil, turpentine, etc., have been used. It is not advisable to attempt this. The process is painful, and, from the possibility of extension of the inflammation to the deeper-tissues, even dangerous. Then again, it destroys the innocent with the guilty, the diseased with the sound follicles ; and above all, it destroys some, but not all the affected hair-bulbs, and some of the parasite is almost certain to be left behind.

Epilation, either as commonly done, or in the way recommended by Kaposi, is the proper step to take. In the ordinary method, the hair is first cut close to the skin. After anointing the surface to be operated on with almond oil, a number of the hairs should be seized with the broad-bladed epilation forceps, and pulled out by traction in the direction of their long axes ; if extracted carelessly they are liable to break off level with the skin. After a sufficient surface has been cleared, some one of the parasiticides mentioned below should be immediately and thoroughly applied. This process is to be repeated day after day, until the whole diseased surface has been treated. Sometimes it is necessary to go twice or thrice over it.

This mode of epilation is painful to the patient and tedious for the physician, and here again affected and unaffected hairs are extracted indiscriminately. Kaposi's method is better. The hair is not to be cut at all ; epilation is done daily by drawing the hair fairly vigorously between the thumb and an ordinary tongue spatula. Only the fungus-infected, loose

hairs come out, and the patient suffers no pain at all. After the process the surface should be thoroughly washed with the tincture of green soap.

Whichever mode we employ, our final effort is by means of some parasiticide to destroy the fungus. A variety of measures stand at our disposal. Such should be selected as possess the greatest penetrating power, so that they shall make their way into the follicles, now empty of their hairs. The ethereal oils, ol. caryophylli, ol. macidis, are quite effective. Corrosive sublimate, one half per cent. solution in alcohol and ether, is one of the best parasiticides we possess. Oleate of mercury, twenty per cent. ; benzine, one-half per cent. in alcohol ; naphthol ; petroleum ; creosote; carbolic acid ; oil of cade ; balsam of Peru, are all efficient. If we prefer to use a salve, white precipitate or citrine ointment, or tar, carbolic acid, or sulphur ointments may be employed. Whatever remedy is selected should be applied with the utmost thoroughness. Fresh areas should be epilated daily, and a constant watch kept on the parts already gone over. When the hair-follicles have not been destroyed by the disease, the hairs grow rapidly after epilation. After several months' treatment the scalp should be left to itself for a time, and not even be washed. If after three or four weeks, we notice that the new hairs are firmly seated, and that no new scutulæ have appeared, we may rest our efforts for a time, though still keeping the patient under observation. If a few isolated crusts appear, showing that in individual follicles the fungus has not been entirely destroyed, we should at once epilate all the hairs in that immediate neighborhood, and apply some vigorous parasiticide. Microscopical examination of the epilated hairs may also be employed to ascertain whether they are still diseased or not.

Favus of the non-hairy portions of the body is easily treated. The crusts should be softened with some oily application, and a mild parasiticide applied. Simply washing with the tincture of green soap will often suffice.

In favus of the nail, as much as possible of that organ and the underlying parasitic mass should be cut and scraped away.

Some efficient parasiticide should then be well rubbed in and under the nail. Mercurial plaster may be applied when the discoloration of the nail shows that the fungus has advanced into its substance.

TINEA VERSICOLOR.

Syn.—Pityriasis versicolor ; chloasma (Wilson.)

Definition.—A vegetable parasitic disease characterized by pale yellowish, yellowish brown, dark brown or fawn colored, irregularly shaped furfuraceous patches, occurring especially upon the anterior portion of the thorax.

Symptoms.—This disease occurs mostly upon those parts of the body covered by clothing and especially upon the neck, thorax, abdomen and groin. It is also occasionally present upon the face, and flexures of the elbow and knee, but is never met with on the hands or feet. It commences as yellowish or brownish, fawn-colored, flat or somewhat elevated, rather sharply limited, furfuraceous patches, which subsequently increase in size by peripheral extension. From the increase in size of the original patches, and by the formation of new ones, the eruption may rapidly occupy a considerable extent of surface. If neighboring patches coalesce the resulting spot will be of irregular shape. Sometimes a patch heals in the centre and thus acquires a circular form. The number of patches present varies very greatly ; there may be only one or two, or they may be quite numerous. Furfuraceous desquamation is almost invariably present, the amount depending greatly upon the amount of perspiration occurring, and upon the frequency with which the parts are washed. When this desquamation is present, scratching the part with the finger nail loosens the scales in the form of lamellæ or rolls. The scales are very fine and furfuraceous in character unless stuck together by the sweat. In some cases no scales can be raised even by deep scratching, the fungus being in the deeper layers of the corneous cells. Upon removal of the scales the skin beneath may show some slightly bleeding spots.

Sometimes the skin has a reddened and punctated appearance or may become inflamed and assume an eczematous condition. More or less itching is generally present. The course of the disease is very variable ; sometimes the eruption spreads very rapidly, at other times slowly, a spot retaining the same size for weeks or months. It is more frequent in winter than in summer. Relapses are very frequent.

Anatomy.—The fungus present in this disease is the microsporon furfur. It is found in the upper layers of corneous cells and consists of mycelium and spores. They do not invade the hair structure. The spores are round or ovalish in form, sharply contoured, with a nucleus and slightly granular plasma, and from 0.007 to 0.500 mm. in diameter. The spores are generally collected in groups which may contain only a few or many hundred of them, though the usual number is from twenty to fifty. Isolated spores are always present in the space between the groups. The spores grow from the end of the mycelia.

Fig. 82.—Spores and mycelia of tinea versicolor.

The mycelia vary greatly in size and form ; they are straight or curved, twisted, wavy, angular, and generally short. They are homogeneous or granular in appearance, and often contain spores, especially at the joints. The nature of the fungus is still undecided.

Etiology.—The disease is the fungus microsporon furfur. Although a parasitic disease and the fungus very abundant and seated in the superficial portions of the epidermis, yet it is but slightly contagious ; a person may even sleep in the same bed for years with one having the disease, and not have it communicated to him. A special condition of the nutrition of the skin seems necessary for its habitation and growth. It is found upon those with lowered nutrition, and is especially met with in persons having pulmonary phthisis. It is also often seen upon persons who subsequently get consumption, and its presence upon the chest in those who do not sweat greatly and who change their underclothing sufficiently often is to be regarded as a suspicious occurrence, and frequently indicates future pulmonary trouble. It is also met with in fairly nourished persons who sweat much and do not bathe their bodies or change their underclothing often enough. It is never met with in young children or old people. Tinea versicolor is a much more frequent disease than statistics by dermatologists would imply as cases of this disease are more frequently seen by the general practitioner than by the specialist in skin diseases.

Diagnosis.—The disease may be confounded with chloasma, seborrhœa of the chest, erythematous eczema and macular syphilide. In all cases of doubt the microscope should be employed, and if the affection is tinea versicolor the fungus is very easily recognized. A few scales placed upon a slide with a few drops of a weak solution of caustic potash and examined with a high power will show the characteristic mycelia and spores already described.

In chloasma the patches are of somewhat similar color, but are smooth, not furfuraceous, of irregular shape and indefinite margin, do not itch and are found especially upon the hands, face and forehead. The pigment in chloasma is seated in the rete, consequently can not be removed by scratching, whilst in tinea versicolor, the fungus which causes the discoloration is seated in the superficial layer of cells of the epidermis and are easily removed.

In seborrhœa of the chest the patches are circular in form,

more or less reddish in color, have greasy scales and there is no parasite present.

Erythematous or slightly papular eczema of the chest, when of limited extent and seated over the sternum, is sometimes difficult to diagnose from tinea versicolor without the aid of the microscope. The patch is roundish in form, but with an irregular indefinite margin, papulæ are always present and there is slight scaling but not furfuraceous desquamation.

In the macular syphilide the history of the case and the seat, color, shape, extent of the patches and absence of a parasite enables the diagnosis to be made. There is an antecedent history of roseola or congestion of the throat, the eruption is seated upon all parts of the neck, chest, face and extremities, the color is dirty brown or coppery, not fawn colored; the patches are often of circular form, not so irregularly shaped and variously sized as those of tinea versicolor, they do not itch or desquamate, a fungus is not present and there are often other forms of secondary syphilis present on other parts of the body. The two diseases may be present upon the same person, but the points already given suffice for the diagnosis.

Prognosis.—The prognosis is favorable; the eruption can with certainty be removed in two or three weeks, but relapses are very liable to occur in the case of ill-nourished or phthisical persons. The fungus itself exerts no injurious effect upon the economy.

Treatment.—The treatment for the removal of the fungus is the same as that for herpes tonsurans maculosus. Any of the anti-parasiticides can be employed, though some act better than others. On account of cleanliness it is better to try solutions before prescribing ointments. The majority of cases will be cured by soap and a solution of corrosive sublimate in alcohol used as follows: The parts of the body affected to be thoroughly washed with soft soap and warm water, the soap being well rubbed in with a piece of flannel; this alkali removes the upper layer of corneous cells, and after drying, the part is then sponged with a solution of corrosive sublimate in alcohol—two grains of sublimate to an ounce of alcohol, and this allowed to

remain upon the skin. This procedure can be repeated two or three times a week, but the body should be washed daily with the soft soap and afterwards sponged with pure alcohol. When the fungus has been removed ordinary baths are all that is necessary. Dr. Tilbury Fox always pursued the following course: first, have the part washed with yellow soap, then sponge with a little weak vinegar and water, and apply freely a solution composed of four or six drachms of hyposulphite of soda and six ounces of water. If the case was obstinate a hyposulphite bath was also ordered. Besides these there are a number of other remedies of service in this affection, sulphurous acid in solution or full strength; sulphur vapor baths, a saturated solution of boracic acid; salicylic acid in alcohol; chloral hydrate—a twenty per cent. solution in water; an ointment of chrysarobin applied daily for three or four days; Vleminckx's solution diluted to one-third the strength; compound tincture of green soap; alkaline baths, etc. Before using ointments the surface should be washed with soft soap and water.

Treatment is always to be continued for some time after the fungus has been removed. To prevent relapses attention must be directed to the general nutrition of the body and appropriate tonics ordered. In many cases other than phthisical, cod-liver oil is of much benefit. If the person affected sweats much the underclothing must be changed every few days.

SCABIES.

Syn.—The itch.

Definition.—Scabies is a contagious animal parasitic disease, due to the presence in the skin of the acarus scabiei, and characterized by the presence of the itch-insect, its burrows and eggs in the integument, by itching, and by the varying evidences of the secondary general dermatitis and its results, papules, vesicles, pustules, excoriations, and crusts.

Anatomy.—The itch-insect, acarus scabiei, sarcoptes scabiei or sarcoptes homini, is a minute insect belonging to the class

arachnoidea, order acarina, family acaridæ. Both male and female are present on the skin ; but the latter are not only by far the more numerous, but are the real cause of the symptoms of the disease. The female insect is just visible to the naked eye as a yellowish-white, rounded object. Under the microscope it appears as an oval, crab-shaped creature. The body is inclosed in a hard casing, on the surface of which are a varying number of transverse lines or furrows, which mark the breaks in the carapace provided to facilitate motion. The dorsum is convex, the ventral surface flattened. The back is studded with a varying number of short, thick spines, as well as several long spike-shaped processes, all set with their points directed backwards. The head is oval, and is provided with four pairs of half-mandibles, and with two three-jointed palpi. There are eight legs, the two hinder pairs of which are provided at their tips with long hairs, whilst the anterior ones are shorter, thicker, conical, and jointed, and have shorter hairs and a cup-shaped sucker at their tips. Posteriorly, between the two oval bristles is situated a cleft leading into the genital sheath. Upon the ventral surface is the ovarian orifice. An intestinal canal, air sac, ovaries, etc., have been found, though neither a circulatory nor a nervous system has been positively demonstrated. The entire insect is about one-fifth of a line in length.

The male acarus is much smaller, perhaps half the size of the female. It has suckers instead of bristles upon its last pair of legs, and between is a horse-shoe-shaped depression in which is sunk the forked penis. Its general structure is otherwise the same as that of the female. Eyes are absent as in the female insect. It is present only in small numbers in comparison with the female insect, and either roams free upon the surface, or burrows but a short distance into the skin near the nests of the females. It takes but little part in the production of the symptoms of the disease, and is said to die within a week after having impregnated the females. Hebra has witnessed the act of copulation itself under the microscope.

It is now necessary to follow the further course of the female acarus. Once impregnated, she seeks for herself a place to

deposit her eggs in security, and in so doing gives rise to all the unpleasant symptoms of the disease. She cuts through the epidermis with her sharp mandibles, bores her head into the skin, and soon disappears from view. As she burrows her way obliquely into the deeper and juicier layers of the skin, she lays a varying number of eggs—one or two a day—and dies after having deposited from twenty to fifty of them.

The oval eggs are placed across the burrow, and measure about one-twelfth line in their long diameter. In them the embryos will be found in various states of development, the

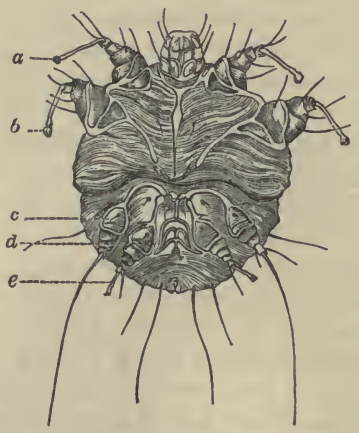


FIG. 83.—Male acarus (Neumann).

eldest being of course those deposited first near the mouth of the burrow. In a week the larvæ have developed. They have in general the same appearance as the parent insect, but possess only two pair of hind-legs. They reach the external integument by crawling through the burrow, and after spending a short time upon the surface, they bore a superficial nest in the integument, in which they remain while they shed their skin. This process occurs four times, and each time the larva finds a new nest, leaving its skin behind in the old one ; at the last shedding the acarus has its full complement of legs and

spines, and a developed sexual apparatus, and begins the whole process just described over again.

The burrow formed by the adult female deserves a little closer attention. As before stated, it runs obliquely downward through the skin, as the insect in its search for nutriment penetrates toward the rete. The whole passage is one-half to one inch in length, straight or zig-zagged, with a rather broad, funnel shaped opening upon the surface, and at the other end

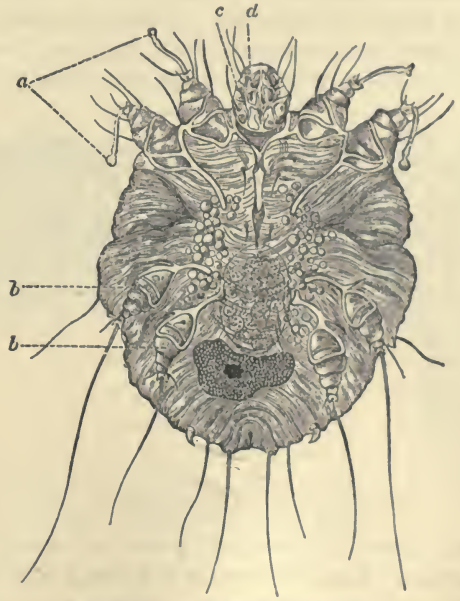


FIG. 84.—Female acarus (Neumann).

—a minute raised yellowish-gray point—the acarus. Along the passage lie the numerous eggs, and small black masses of fæces; these latter are visible to the naked eye, and render the course of the insect plain. The mite itself may be obtained by means of a needle or any appropriate instrument; or the entire passage may be carefully clipped off with scissors, and put under the microscope compressed between two slides.

The burrowing of the insect through the skin naturally causes a certain amount of irritation, which varies, however, very much according to the susceptibility of the individual integuments. Sometimes enough inflammatory reaction to cause the formation of pus is set up, and pustules result ; in other cases papules or vesicles are seen, or a more diffuse dermatitis arises. Though the parasites may be present on large tracts of skin, or even over the whole extent of the surface of the body the dermatitis and eczema are always more violent where the burrows are seated in abundance. Certain localities seem to be the favorite area for the deposition of the ova. These are the flexor surfaces of the wrists, the sides and clefts of the fingers,

FIG. 85.—Burrow with eggs and developing acari. From Neumann.

the female breasts, the navel, the penis and scrotum, and the gluteal regions. Localities where the skin is thin and pressed upon by the clothing, as the axillæ, are also favored.

All the varying appearances of eczema and dermatitis are caused by the presence of the acari, male and female, and their larvæ. Papules, vesicles, pustules, excoriations, crusts, all are caused by the insect or by the scratching which is necessitated by the intense itching it causes. In a sensitive skin, predisposed to eczematous eruptions, the symptoms may be very marked.

Etiology.—Scabies is caused solely by the reception upon the

skin of the itch insect, from individuals affected by the disease. The itch in animals appears to be caused by the same species of acarus, and a certain number of cases occurring in stablemen, menagerie attendants, etc., have been directly traced to this source.

. Probably, in most cases, it is the larvæ, wandering free upon the surface of the skin, which are transferred from one individual to another. The impregnated females are rarely seen upon the surface. A neglected and dirty skin undoubtedly offers a favorite habitat to the parasite.

At night, when the patient is warm in bed, the acarus is most active, and then it is that itching becomes almost intolerable. It is at night, also, that it is transferred from one individual to another. The fear of acquiring the itch from simple contact with persons affected with it, is entirely groundless; nor is it likely to remain in the clothing. In almost every case of the itch, a history of having contracted it from a bedfellow is to be obtained.

Scabies occurs at all periods, and in all conditions of life. It is far commoner in Europe than it is here, forming all the way from 3 to 25 per cent. of all cases of skin disease. In Glasgow, it seems to be specially prevalent, over 2,500 examples having occurred in 10,000 consecutive cases of skin disease recorded by Anderson. In the larger sea-board cities of the United States it is seen to a moderate extent, being in many cases traceable to a direct importation from Europe. It rarely forms more than a fraction of one per cent. of the observed cutaneous disorders here, and in the interior of the country it is very rare.

Symptoms.—The symptoms caused by the advent of the first parasite upon the skin are few and insignificant, and are always neglected by the patient. It is only after a number of days, or several weeks have passed, when the new broods developed from the parent insect begin to burrow their way into the skin, that the irritation caused by the disease becomes annoying, and the patient seeks medical advice.

The chief symptom that the patient then complains of is the itching. This varies much in intensity in different persons,

but is usually quite severe. It is especially marked upon those portions of the body where the parasites burrow, but is by no means confined to these regions. It is usually slight during the day, but becomes intensely annoying at night, when the patient gets warm in bed. This itching, together with the presence of a limited number of papules and vesicles, and the characteristic burrows, form the only symptoms due to the actual presence of the acarus.

But a second set of appearances are always to be found ; in their extent and intensity usually exceeding by far those mentioned above. These are the symptoms caused by the secondary dermatitis or eczema due conjointly to the parasite and the patient's finger nails. The lesions caused will be manifest, and vary with the number of acari present and the irritability of the patient's skin. Papules, vesicles, pustules, excoriations, blood-crusts, urticarial wheals, etc., may be present in varying quantity upon different portions of the skin. Sometimes they are confined to the regions where the acarus most frequently burrows, the anus, nates, genitals, finger-clefts, etc. ; but often the eczematous affection is widespread, and sometimes it affects the entire surface of the body. In old standing cases a peculiar pigmentation of the skin is seen, from the repeated hemorrhages into the cutis caused by the scratches, just as the same pigmentation is noticed in old cases of pediculosis, etc.

The localization of the eczema, secondary to scabies, is an important point. Even when the dermatitis is universal, or nearly so, the inflammation will be most acute upon the places where the skin is thin and the acarus is most frequently found. Thus it is most intense around the anterior surface of the wrists, the sides of the fingers, the flexor surfaces of the elbow and knee, around the breast, on the scrotum, penis and labia, etc. In children, the palms are a favorite location.

In any case, absolute certainty may be obtained by finding the burrows. They should be sought for on the spots where the itching and dermatitis are most intense. The peculiar dotted lines, half an inch or so in length, with the elevations marking at one end the point of entrance, and at the other the

present resting place of the acarus, are characteristic. The color of the burrows in persons not too cleanly in their habits, is dark; the loosened epidermis of the funiculus retains dirty particles more tenaciously than does the surrounding skin. In those who wash frequently they appear as prominent whitish furrows, marked with faint black spots.

The location of a multiform eczematous eruption in a "shield shape" upon the genitals, lower abdomen and thighs, in itself alone should lead us to suspect scabies. Of still greater significance is the presence of papules or vesicles upon the sheath of the penis; it may be taken as *prima facie* evidence of scabies, though, of course, absolute certainty can only be reached by the discovery of the parasite or its burrows.

The course of the scabies eczema varies. Any one of the above-mentioned lesions may predominate. The papules, vesicles, or pustules, are torn—the epidermis and corium is lacerated by the finger nails, blood, serum and pus crusts are formed, and a pathological appearance of the most multiform variety is usually presented by the disease as it comes under our observation. If the cause continues active, these symptoms may last for years, and thickening and pigmentation of the skin result. The cause once removed, the morbid processes usually soon subside, though in those predisposed to eczema the dermatitis may last indefinitely, even if the scabies is cured.

Diagnosis.—The pathognomonic symptom of scabies is, of course, the presence of the parasite, or its burrows, upon the skin. Nevertheless, in a large number of cases we will be compelled to make the diagnosis without finding either. It requires some practice to obtain the mite itself from one of the vesicles or cuniculi. The burrows are, in early stages, not numerous, and, in the later, are obscured by the eczematous appearances, excoriations, crusts, etc., and are, indeed, often themselves destroyed by the patient's nail. The best place to look for them is upon the sides of the fingers.

Failing to find either burrows or acari, there are certain other symptoms which usually suffice for the diagnosis. The

peculiar appearance of the eruption, as described above, its localization around the genitals and upon the fingers, and especially its presence upon the penis in the male, are points of value. A history of contagion can often be obtained. Treatment for scabies will in a short time settle all doubts as to the nature of the malady.

There are only two diseases with which the affection is liable to be confounded. In pediculosis the absence of the general dermatitis and the characteristic location of the scratch-marks in each variety of the disease. And above all, the finding of the pediculus or its nits—usually easily accomplished—will suffice. As regards the differentiation of a pustular eczema from scabies, the localities affected, the steady increase of the symptoms, especially of the scratching, and the history of contagion, all distinguish the parasitic disease. Of course, the finding of the burrows, or their remains, or the mite itself, renders the diagnosis absolutely certain.

Prognosis is always good, even in cases of long standing. If care be taken to kill all the parasites and their embryos, the disease is at an end. It is rare in this country to see scabies in conjunction with an obstinate pustular eczema, though it more frequently occurs in Europe.

Treatment.—The primary object of our therapeutic efforts is, of course, to destroy the parasite and its larvæ. After that, if necessary, we can treat the secondary dermatitis. The first object can usually be attained in from a few hours to five or six days ; the second may take several weeks.

A large number of remedies stand at our disposal for the killing of the acari. The commonest and one of the most efficient is sulphur. This may be used as an ointment—either the ordinary sulphur ointment of the pharmacopœia, or, as it sometimes proves irritating, a mixture of it with simple cerate. A large number of compound sulphur ointments are also in vogue. Hebra's modification of Wilkinson's ointment is much used—viz.: ℞. Flor. sulph., ol. cadini āā, 40 parts ; sapo viridis, axung. porci. āā, 80 parts ; pulv. cretæ alb., 5 parts ; as also is Helmerich's salve—℞. sulph. citrini, 10 parts ; potass. subcarb.,

1 part; axungiæ, 40 parts. The ordinary sulphur soap of the shops is sometimes quite efficacious.

The ethereal oils of certain plants are preferred by some, as oil of cloves, of peppermint, of rosemary, of staphysagria seeds, etc. So also are some of the balsams and empyreumatic oils—balsam of Peru, balsam of Tolu, petroleum, styrax, tar, etc. These may be used by themselves, or better in conjunction with some one of the forms of sulphur ointment.

Vleminckx's solution is one of the quickest means at our disposal for the cure of scabies; it is much used in some of the Continental armies, where scabies is very common. It is said, if thoroughly applied, to destroy the parasite within two hours.

Kaposi recommends naphthol as especially reliable. This, made up into a compound ointment, he claims emphatically to be the best remedy for scabies. His formula is as follows: ℞. Axung., 100 parts; sapon. virid., 50 parts; naphthol, 15 parts; pulv. cretæ alb., 10 parts. The ointment has neither color nor smell, soon renders the skin soft and smooth, and is not only an efficient parasiticide, but is an excellent application for the dermatitis. For mild cases, balsam of Peru, either alone or with sulphur or the ethereal oils is very good. It may be used as a wash with styrax as follows: ℞. Styracis liq., 5 parts; petrolati, ol. oliv. āā, 15 parts; bals. Peruv., 10 parts; tr. sap. virid., 20 parts.

The above selection will suffice out of a multitude of remedies and formulæ which might have been mentioned. The usual preparatory treatment by means of baths, etc., is not only unnecessary, but has a deleterious influence upon the often accompanying eczema. Whatever ointment or lotion is selected, it should be well rubbed into the skin either with the hand or with a woolen rag. It should first be vigorously applied to all those locations above mentioned as the favorite burrowing places of the parasite, and then in addition be well smeared over the entire skin. With the sulphur ointments several applications are usually necessary. The naphthol ointment requires but one thorough inunction. Woolen cloths should

then be put on, or the patient laid between blankets, as linen or cotten absorbs the ointment. A slight desquamation of the epidermis usually follows, and when that is complete, and all the symptoms of irritation are gone, the patient may take a bath. As a usual thing the cure takes from three days to one week.

As regards the treatment of the eczema which may be left in severe cases after destruction of the parasite, that should consist, in the first place, in the avoidance of all sources of irritation which might serve to keep up the artificial eczema. Bathing is to be avoided, and, if necessary, a course of treatment with diachylon ointment, tar, etc., instituted.

Finally, the clothes worn by the patient should be baked, to prevent all possibility of further contagion.

PEDICULOSIS.

Syn.—Phtheiriasis.

Definition.—Pediculosis is the name given to the symptoms caused by the presence upon the skin and in the clothing of certain animal parasites called pediculi.

Symptoms.—The lice which affect the human subject belong to the family pediculidæ, order hemiptera, class insecta. They are wingless, non-metamorphosing insects, which live upon the blood and secretions of the body, obtaining the nutrient fluids by a process of suction. In consequence of the minute wound a small amount of blood and serum exudes, and dries into a crust; more or less hyperæmia and serous infiltration occurs at the spot, and in consequence thereof a marked itching. The itching causes scratching, and to the nails are due the majority of the skin lesions of pediculosis. Excoriations, blood-crusts, eczematous patches, papules, vesicles, pustules, urticarial wheals, and even abscesses appear as secondary lesions, leaving a varying amount of pigmentation behind when they disappear. All these different appearances are called, on an etiological basis, phtheiriasis; and it will sometimes be necessary to make the diagnosis from them without finding any of the characteristic causes of the lesions.

Three varieties of lice affect the human body. They are :

1. *Pediculus Capitis*—or head louse.
2. *Pediculus Vestamenti.*—s. p. corporis, or body louse.
3. *Pediculus Pubis.*—s. p. inguinalis, or crab-louse.

The three varieties are different both in their male and their female forms. The territory also which each variety inhabits is quite strictly limited ; the head louse being found only upon the scalp, the crab louse almost always only around the external genitals, and the body louse, not upon the body at all (save accidentally) but in the seams and folds of the clothing. Hence it is quite easy to diagnose the variety of pediculus from the location of the scratch marks alone.

1. *Pediculus Capitis.*—The head louse is an insect of a grayish color, and measures from one to three millimetres. It is oval

Fig. 86.—Pediculus Capitis, male. (Kuchenmeister.)

in shape, the abdomen occupying more than half its length, and consisting of seven clearly defined segments, marked off from one another by deep notches. The thorax is broad, and from its sides project the six legs, each one hairy and provided with a crab-like hook at its extremity. The head is somewhat triangular in shape, and is furnished with a pair of short, five-jointed antennæ and two black and prominent eyes. The *males* are smaller than the females and less numerous ; the last abdominal segment is very prominent ; upon their backs is a large genito-anal pore, and a large, wedge-shaped penis. Each one is provided with two pairs of testicles. The *females*

have a more deeply segmented abdomen, in the last division of which is the anal pore ; they possess two ovaries, the oviducts of which open by means of a common vaginal canal upon the ventral surface.

The eggs, or "nits," are deposited upon the hairs as the female slowly crawls from the roots upward ; a series of them may be present upon single hairs. They are small, pear-shaped, whitish bodies, about one-fourth of a line in length, and securely glued to the hairs. They take only three to eight days to hatch, and the young become capable of reproduction in three weeks. They are extremely prolific ; the progeny of a single louse may number five thousand within eight weeks.

The louse itself may be found either upon the scalp, or on the hair ; they especially affect the occipital region. They are most often seen in children, and are liable to spread from one to another, through the large schools, etc., though they are common enough among the poor of all ages. They occasion, by their presence upon the scalp a catarrhal dermatitis—an artificial eczema. The itching of the scalp causes continuous and violent scratching ; serum, blood, and eventually, a purulent fluid oozes out, mats the hair together and dries up into crusts. Excoriations, vesicles and pustules, or diffuse eczema, may extend beyond the limits of the hair, and is visible along the forehead and upon the back of the neck. The amount of inflammation caused by the presence of the parasite varies in different cases ; being greater, of course, in those whose skin is predisposed to eczematous processes, and who are ill-nourished and badly cared for.

The insects always deposit their nits near the root of the hair, and consequently when we see them or their remains well up towards its extremity we can conclude that the affection is of long standing—since the eggs have advanced upward through the growth of the hair. In accordance with the number of the parasites and the length of time they have been permitted to stay in the hair will vary the intensity of the inflammatory process brought to our notice. In women and children, who, either from neglect or sickness, have omitted frequent bathing and

fine-combing, the spectacle is sometimes a most disgusting one. The long, dirty hair is matted and twisted together, glued up with decomposing pus and blood crusts ; the hairs are full of nits ; the odor is nauseous, and the lively motions of the innumerable parasites when you disturb the hair give to it a tremulous, apparently alive or writhing motion. Something of this nature was the condition called plica polonica, so long looked upon as a specific disease of the hair and scalp.

If the affection is at all extensive the neighboring lymphatic glands become swollen and tender from the inflammation and pus absorption. The general health, even if good at first, may soon deteriorate from the worry, loss of sleep from the itching, etc. Though almost invariably limited to the hairy scalp, pediculus capitis has been seen on feeble and bedridden individuals on other parts of the body, and even affecting the whole body

Fig. 87.—Pediculus Corporis, female. (Kuchenmeister.)

2. *Pediculus Corporis.*—More properly p. vestamenti. The body louse resembles in general the above-mentioned variety, but is larger, measuring from one to four millimetres. When empty of blood their color is of a dirty white, or grayish hue. Here again the *male* is smaller than the female ; the penis is very large and wedge-shaped, and rises from the middle of the dorsal surface of the abdomen. The *female* is elongated and

oval in shape, with an abdomen broader than that of the male, and ending in a triangular notch. In both sexes the abdominal segments are less distinctly marked than in p. capitis ; the thorax is square, and furnished with six three-jointed hairy legs armed with stout claws ; the head is acorn-shaped, with eyes and two five-jointed antennæ.

This variety of pediculus does not live upon the skin at all. It dwells in the clothing ; only coming upon the integument to feed. Its eggs, which are like those already described, but larger, are deposited in the seams and folds of the clothing. Their period of growth is about the same as that of the last-mentioned variety, and their reproductive powers at least as great.

This louse, therefore, is to be sought for not upon the skin, but in the clothing of the patient. Where they are abundant we usually find some upon the integument, which have been surprised there while in the act of feeding, and have not had time to escape. They may be seen running rapidly across the skin trying to find some nook to conceal themselves in. They obtain nourishment exactly in the same mode as the p. capitis.

The presence of the body louse in the clothing causes a number of quite characteristic appearances. The parasites live especially in the seams and folds of the undergarments, and therefore the lesions they occasion are found around the neck and shoulders, the waist, wrists, nails, etc. The large size of the louse causes a more prominent lesion to follow its bite. A wheal, followed by intense itching, is caused ; scratching is often very violent, and the patient digs and tears the skin with his finger-nails. Long and broad excoriations cover the sides of the abdomen ; sometimes the distinct parts of the four parallel fingernails can be recognized. After a time dark, pigmented streaks replace the excoriations.

In bad cases, when the parasites have infested the patient's clothing for a long time, the secondary lesions may be both numerous and varied. Multiple and deep excoriations, pus and blood crusts, papules and pustules, diffuse dermatitis, furuncles, abscesses, or even gangrene, may be occasioned by the

irritation set up by these creatures. Eventually, a diffuse brownish or blackish pigmentation of the skin appears—at first affecting only the waist, neck, etc., later perhaps spreading over the entire trunk. As pediculosis corporis of this grade occurs only in tramps and homeless persons, whose systems are debilitated by exposure, want, syphilis, malaria, etc., and in whom the exposed parts of the skin are usually sun-burned and weather-stained, there is no doubt, as Kaposi states, that many of them have served for the diagnosis of a case of the so-called Addison's disease.

Since the pediculi reside only in the clothing, a patient need but change it, and, though he presents all the evidences of phtheiriasis corporis, not a single parasite will be found. It is necessary then, to make the diagnosis fron the general character and location of the eruption, a thing usually easy to do, since in any but its slight forms the affection never occurs save in the lowest classes, who frequent cheap lodging-houses, police stations, and the large public institutions.

FIG. 88.—Pediculus pubis ; female ; under surface.

3. *Pediculus pubis*, or phtheirius inguinalis, or the crab-louse. This is the smallest of the three varieties, measuring only from one to two millimetres. Its body is short,

rounded, and flat, and upon it is set the oval head, which is furnished with two long, five-pointed antennæ, and a pair of small eyes. The thorax and abdomen are merged into one; and six hairy, three-pointed claws, hooked at the end, project from its anterior part. The margin of the abdomen is slightly indented, showing its segmented origin, and from it project eight stubby, prehensile legs, armed with stout hairs. Their color is yellowish-gray, and they are more or less transparent. As in the other cases, the female animal is the largest, and possesses a triangular shaped notch at the extremity of the abdomen.

P. pubis lives any where upon the body where there are hairs, with the exception of the head. They are especially common on the pubic regions, the chances for communication from person to person being greater there (hence their name); but they are also found in the axillæ, upon the breast, on the limbs, in the beard and mustache, and in the eyebrows and lashes. The more hirsute the individual the more liable are they to spread from the pubes over the whole body.

They are usually hard to detect, on account of their transparency and because they move but little, lying stern upward along a hair, closely clutching it with their claws, while their heads are buried deep in the follicles. The ova are smaller than those of p. capitis, but are similar in construction, and are attached to the hairs in the same way. They are frequently seen like small pearls upon the eyelashes. The excrement of the parasite may be found in the form of minute reddish particles lying around the bases of the hair.

The amount of irritation and consequent scratching effected by the presence of this variety of louse varies much in different cases. They usually cause considerable itching, and a more or less marked eczema, generally of the papular variety. They are almost always contracted during sexual intercourse.

Etiology.—It is probable, according to recent investigation, that the pediculus does not possess a mouth and mandibles, by means of which it first pierces the skin, and then feeds upon the blood, but that it is provided with a sucker, or haustellum,

which it inserts into the follicles, thus obtaining the nutrient fluid by suction.

The original lesions are the minute hæmorrhages produced by the pediculi from the irritation of which springs the pruritus that causes the secondary effects.

Diagnosis.—As regards pediculosis capitis it seems impossible that a mistake should occur ; yet it happens occasionally that it is long treated as eczema, without the physician discovering the parasite. The nits are prominent, and the animals themselves will always be found upon a moderately careful search. It is to be remembered, however, that a long continued eczema capitis with the consequent avoidance of soap and comb, offers an excellent breeding place for any parasites, while may accidentally lodge upon it. Eczema of the occipital region should always make us suspect pediculi. The characters of ezcema from this cause have been already described in the chapter on eczema.

In pediculosis vestamenti, the parasite and nits must be sought for in the seams and folds of the underclothing, especially of the body linen. As a usual thing no parasite will be found upon the skin. But the peculiar location and appearance of the scratch-marks alone will in most cases suffice for a diagnosis. It is needless to say anything about the differential points between this disease and pruritus, prurigo and scabies ; they will be found under their respective headings.

Pediculosis pubis is sometimes overlooked, or mistaken for eczema or pruritus. The parasites are small and transparent, and rather difficult to see. They often look like dirt-specks upon the skin. They may cause remarkably little annoyance.

It should not be forgotten that many persons whose habits are irreproachable are liable to be occasionally affected with pediculi, getting them accidentally from other people, or from infected chairs, clothing, or bedding ; and in some such cases there is noticed a persistent search for the pediculi, and continuous dread of infection, amounting to a pediculi-phobia.

Treatment.—Various measures may be employed to destroy

the parasites and their ova. Strict personal cleanliness is of course absolutely necessary. Powders, ointments, or lotions containing tobacco, carbolic acid, petroleum, sulphur, mercurials, staphysagria (from the seeds of delphinium staphysagria), etc., may be employed. The secondary lesions are then easily cured or heal of themselves.

Pediculosis capitis.—One of the commonest and best means which we can employ in this variety is petroleum, which may, to render it less inflammable, be mixed with half its bulk of olive oil, and one-quarter its bulk of balsam of Peru ; or be used as kerosene, to be well soaked into the hair every night, and then the head to be bandaged. Naphthol in five per cent. oily solution may be used instead. In twenty-four hours by this means all the lice and their eggs should be dead. Hot water and soap, or tincture of green soap, may now be used to remove the parasites, the crusts, and the dead lice. The surface is left clean, though red, and the hair can be carefully combed. The eczema is to be treated by means of emollient salves and oils, and the head to be washed daily. It is never necessary to cut off a patient's hair, but it facilitates treatment, and in children may be done.

Lotions of corrosive sublimate, grains 2–5 to the ounce of water, or alcohol and some essential oil, form neat and efficacious means of treatment. White precipitate ointment, grains twenty, and staphysagria ointment are also useful.

By one of these means the parasite and its eggs may soon be destroyed ; but the resisting "nits" remain, and annoy the patient with the appearance of lousiness, though he is quite clean. Vinegar or dilute acetic acid, will soften them, when they may be removed by a diligent use of the fine tooth comb.

Pediculosis Corporis.—The clothes should be treated—not the patient. The entire wearing apparel should be changed, and then immersed in boiling water, or baked by subjecting it for a considerable time to an elevated temperature. Repeated examinations, and most careful ones, should be made of the clothing, otherwise some eggs or pediculi will be overlooked,

and become the parents of another crop. Alkaline baths, such as one of bicarbonate of soda, six ounces to the bath, or lotions containing three drachms of carbolic acid and half an ounce of glycerine to the pint of water are useful to allay itching and relieve the excoriations. Attention to these details will speedily cure all cases.

Pediculosis Pubis.—Almost any of the remedies previously spoken of may be used. Very appropriate is the corrosive chloride lotion above described ; but it is unreliable and if too freely or too often applied it is liable to cause an acute and quite painful inflammation of the skin of the scrotum. Blue ointment is the most efficient remedy we possess for destroying or removing the pediculi. One or two applications are generally sufficient and it must not be rubbed too energetically into the skin. The objections to its use are that it is a dirty preparation, soiling the underclothing and that it sometimes causes an eczema. When the affection extends over the greater part of the body mercurials are dangerous and carbolic acid lotions or tobacco infusions should be employed instead. A five to ten per cent. solution of naphthol in olive-oil, or a white precipitate ointment, or petroleum and balsam of Peru in equal parts are also efficacious.

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